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# REPORT

OF THE



# COAL MINE INSPECTOR

FOR THE

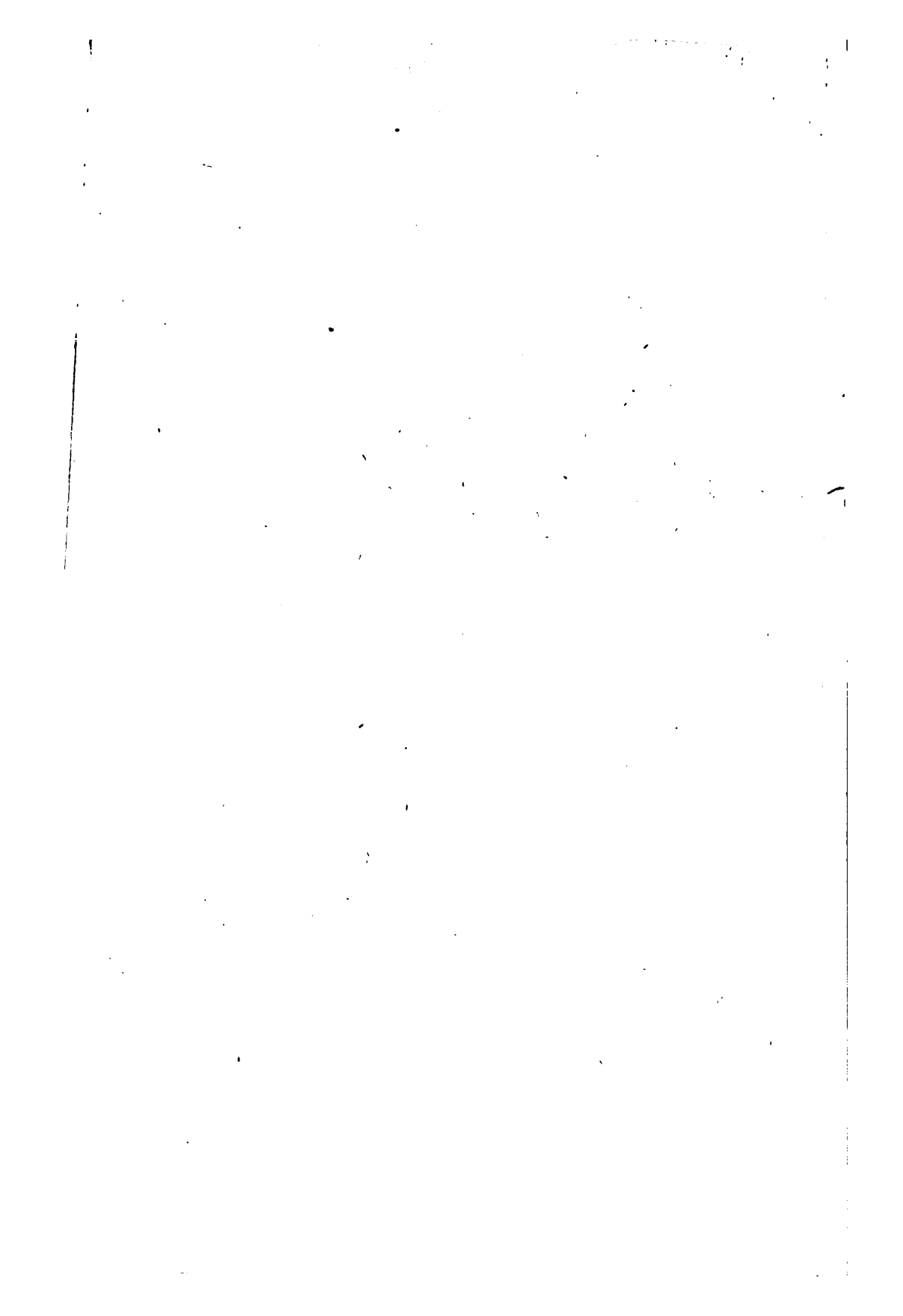
## STATE OF UTAH,

FOR THE YEARS 1899 AND 1900.

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SALT LAKE CITY,  
THE DESERET NEWS.  
1901.









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FOR THE YEARS 1899 AND 1900.

SALT LAKE CITY,  
THE DESERET NEWS.  
1901.

**Compliments of.**

**GOMER THOMAS.**  
**STATE COAL MINE INSPECTOR**  
**SALT LAKE CITY, UTAH**

# REPORT

OF THE

## COAL MINE INSPECTOR

FOR THE

STATE OF UTAH,

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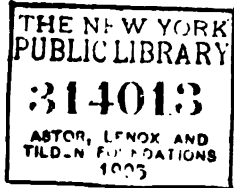
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SALT LAKE CITY,  
THE DESERET NEWS.

1901.

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**REPORT**  
**OF**  
**STATE COAL MINE INSPECTOR**  
**FOR 1899.**

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OFFICE OF GOMER THOMAS, STATE COAL MINE  
INSPECTOR OF THE STATE OF UTAH,  
SALT LAKE CITY, UTAH,  
January 1, 1900.

*Hon. Heber M. Wells, Governor of the State of Utah,  
Salt Lake City, Utah:*

Sir:—In accordance with the provisions of the Revised Statutes of Utah, 1898, relative to mines and mining, I have the honor to submit to your Excellency, the fourth annual report of Coal Mine Inspector of the State of Utah. Very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

*To His Excellency, Heber M. Wells, Governor of the State  
of Utah:*

Sir:—I have the honor to submit to you, the fourth annual report of the State Coal Mine Inspector of the State of Utah, for the year ending December 31, 1899.

It contains tables and statistics, showing the location of mines, total number of tons of coal mined; num-



ber of days worked; number of employees; number of accidents, and the number of kegs of powder used.

I am very pleased to report, that there has been no fatal accidents in any of the coal mines of the State of Utah during the year 1899.

There has been thirty-nine non-fatal accidents during the year, most of which were very slight. Nearly all of these accidents were due to the carelessness of the injured; many of them could have been avoided if due and proper care had been exercised by the employees in and around the mines.

You will see by this report, that this year's tonnage has an increase of 204,825 tons over that of the year 1898, and an increase of 407 employees over that of the year 1898.

I have placed in this report a brief description of all the coal mines of the State.

I am gratified to state that this has been the most successful year in the history of the coal mine industry in the State of Utah.

All employees have worked to the comfort, benefit and health of their employers; therefore they have been free from friction or disturbance. Wages have been good, and employment has been uniformly steady and fairly remunerative.

Not a strike, lockout, nor a suspension has been recorded, on account of wage rates during the year; and the indications are that next year will be far more successful than this, and equally free from strife or disturbances.

All suggestions and requests that I have made during the year, for the safety, comfort and health of the employees, have been cheerfully complied with on the part of the employers.

In addition to the report on the Coal Mines of Utah, I also submit to you a report on the other hydro-carbon mines of the State: Gilsonite, Elaterite and Asphaltum.

**PRODUCTION OF COAL, COKE AND ASPHALTUM; AND IM-  
PORTS AND CONSUMPTION OF SAME IN  
UTAH FOR 1899.**

	Bituminous.	Anthracite.	Coke.	Asphaltum.
Production in Utah . . .	878,122	10	26,671	2,142
Importation into Utah .	291,831	5,686	20,473	220
Total . . . . .	1,169,953	5,696	47,144	2,362
Exportation from Utah .	532,536	. . . . .	. . . . .	2,142
Consumed in Utah.. . .	637,417	5,696	47,144	220

**COAL PRODUCTION, OF THE SEVERAL MINES IN THE STATE  
OF UTAH, FOR 1899.**

NAME OF MINE.	OPERATED BY	No. of Short Tons
Winter Quarters . . . . .	P. V. Coal Company . . . . .	438,107
Castle Gate . . . . .	P. V. Coal Company . . . . .	295,696
Clear Creek . . . . .	P. V. Coal Company . . . . .	28,284
Sunnyside . . . . .	R. Forrester, Agent. . . . .	11,179
Wasatch . . . . .	Weber Coal Company . . . . .	22,746
Grass Creek . . . . .	Grass Creek Coal Company . .	20,400
Thomas . . . . .	Sterling Coal & Coke Company	3,075
Manti Coal Company . . . .	Manti Coal & Coke Company .	1,800
Deseret . . . . .	Deseret Coal & Coke Company	2,500
Aberdeen . . . . .	Whittemore & Ballinger . . .	600
Cedar Creek . . . . .	Grange & Gardner . . . . .	550
Corey. . . . .	Andrew Corey . . . . .	425
Harkness . . . . .	S. J. Harkness . . . . .	300
Black Baby . . . . .	Hartinson & Company . . . .	300
Cluff . . . . .	W. W. Cluff . . . . .	150
Dexter . . . . .	Dexter & Sons . . . . .	110
Boyer . . . . .	William Boyer . . . . .	100
Uintah County Mines. . . .	. . . . .	6,450
Other small mines . . . . .	. . . . .	45,350
Total . . . . .	. . . . .	878,122

TABLE SHOWING THE COAL TONAGE FOR 1890 AS COMPARED WITH 1898.

COUNTIES.	Short Tons.	Short Tons.	Short Tons.	Short Tons.
	1898.	1890.	Gain.	Loss.
Carbon . . . . .	577,079	776,686	199,607	. . . . .
Summit . . . . .	41,268	43,356	2,088	. . . . .
Uintah . . . . .	5,000	6,450	1,450	. . . . .
San Pete . . . . .	8,730	4,875	. . . . .	3,855
Iron . . . . .	. . . . .	1,125	1,125	. . . . .
Grand . . . . .	625	300	. . . . .	325
Emery . . . . .	450	. . . . .	. . . . .	450
Other small mines . . . . .	40,145	45,350	5,205	. . . . .
Total . . . . .	673,297	878,122	209,455	4,630
Net gain . . . . .	. . . . .	. . . . .	. . . . .	204,825

# PRODUCTION OF COAL IN UTAH DURING YEAR 1899.

## BY COUNTIES.

COUNTIES.	Number of Mines.	Total Product in Short Tons.	Made into Coke, Short Tons.	TOTAL VALUE.	Average Price, per Ton.	Average Number of Days.	Average Number of Men Employed.
Carbon . . . . .	6	776,686	26,671	\$908,699.22	\$1.17	1205	961
Summit . . . . .	4	43,356	. . . .	65,034.00	1.50	633	76
Uintah . . . . .	37	6,450	. . . .	11,287.50	1.75	100	60
San Pete . . . . .	2	4,375	. . . .	7,031.25	1.75	500	8
Iron . . . . .	3	1,125	. . . .	1,687.50	1.50	430	9
Grand . . . . .	1	300	. . . .	450.00	1.50	60	4
Other small mines . . . . .	. . . .	45,350	. . . .	68,025.00	1.50	. . . .	. . . .
Total . . . . .	56	876,122	26,671	\$1,062,214.47		2928	1118

## PRODUCTION OF COAL IN UTAH FOR 1898.

673,297 short tons; value, \$784,787.42, showing an increase for 1899 of 204,825, the value of which is \$243,741.75.



TABLE SHOWING THE COAL PRODUCTION IN THE STATE OF  
UTAH FROM 1876 TO 1899, BOTH INCLUSIVE.

YEAR.	Number of Tons Produced.	Gain, Tons.	Loss, Tons.
1876 . . . . .	50,400	. . . . .	. . . . .
1877 . . . . .	50,400	. . . . .	. . . . .
1878 . . . . .	67,200	16,800	. . . . .
1879 . . . . .	225,000	157,800	. . . . .
1880 . . . . .	225,000	. . . . .	. . . . .
1881 . . . . .	225,000	. . . . .	. . . . .
1882 . . . . .	250,000	25,000	. . . . .
1883 . . . . .	250,000	. . . . .	. . . . .
1884 . . . . .	250,000	. . . . .	. . . . .
1885 . . . . .	213,120	. . . . .	36,880
1886 . . . . .	200,000	. . . . .	13,120
1887 . . . . .	180,020	. . . . .	19,980
1888 . . . . .	259,501	79,500	. . . . .
1889 . . . . .	236,651	. . . . .	22,850
1890 . . . . .	318,159	81,508	. . . . .
1891 . . . . .	371,045	52,886	. . . . .
1892 . . . . .	361,314	. . . . .	9,731
1893 . . . . .	418,049	56,735	. . . . .
1894 . . . . .	447,276	59,227	. . . . .
1895 . . . . .	172,958	. . . . .	274,328
1896 . . . . .	503,243	330,285	. . . . .
1897 . . . . .	582,092	78,849	. . . . .
1898 . . . . .	673,297	91,205	. . . . .
1899 . . . . .	878,122	204,826	. . . . .

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN THE STATE AND THE NUMBER OF EACH THAT WERE IN OPERATION IN 1899.

BY COUNTIES.

Counties.	Number of Mines which Employed more than 6 Men.	Number of Mines that Employed less than 6 Men.	Total by Counties.	Number of Large Mines in Operation During 1899.	Number of Small Mines in Operation During 1899.	Total Number of Mines in Operation in 1899.
Carbon.....	9	10	19	9	10	19
Summit.....	3	5	8	2	4	6
Iron .....	.....	13	13	.....	13	13
Uintah.....	.....	38	38	.....	38	38
Sanpete.....	.....	6	6	.....	6	6
Grand .....	.....	6	6	.....	6	6
Emery .....	.....	12	12	.....	12	12
Total.....	.....	.....	.....	.....	.....	100

TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES OPERATED AND DAYS WORKED IN  
1898 AND 1899.

Counties.	Number of Mines Worked, 1898.	Number of Mines Worked, 1899.	Gain.	Loss.	Average Number Days Worked in 1898.	Average Number Days Worked in 1899.	Gain.	Loss.
Carbon .....	5	9	4	.....	783	1205	422	.....
Emery .....	1	12	11	.....	250	250	.....	.....
Summit .....	5	4	.....	1	817	633	.....	184
Uintah .....	6	38	32	.....	160	100	.....	50
Iron .....	.....	3	3	.....	.....	430	430	.....
Grand .....	2	1	.....	1	120	60	.....	60
San Pete .....	5	2	.....	3	810	500	.....	310



**TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES  
IN 1899 COMPARED WITH 1898.**

COUNTIES.	1898.	1899.	Gain.	Loss.
Carbon .....	574	961	387	
Summit .....	77	76		1
Uintah .....	16	60	44	
San Pete .....	47	8		32
Grand .....	4	4		
Iron .....		9	9	
<b>Total.....</b>	<b>715</b>	<b>1,118</b>	<b>440</b>	<b>33</b>

Showing a gain of 407 men in 1899.

**TABLE SHOWING THE NUMBER OF MINES OPENED, SUS-  
PENDED AND ABANDONED DURING 1899.**

COUNTIES.	No. of Mines Opened.	No. of Mines Suspended.	No. of Mines Abandoned.
Carbon .....	7	1	1
Emery .....	12		
Summit .....		2	1
Iron .....	11		
Grand .....	4		
San Pete .....	1	3	
Uintah .....	13		
<b>Total.....</b>	<b>48</b>	<b>6</b>	<b>2</b>

**TABLE SHOWING NUMBER OF FATAL ACCIDENTS AND THE  
NUMBER OF NON-FATAL, AND THE COUNTY IN WHICH  
THE SAME OCCURRED, DURING THE YEAR 1899.**

COUNTIES.	Fatal.	Serious.	Non-Serious	Total.
Carbon .....		5	32	37
Emery .....				
Summit .....			2	2
Iron .....				
Grand .....				
San Pete .....				
<b>Total.....</b>		<b>5</b>	<b>34</b>	<b>39</b>

TABLE SHOWING COMPARISON OF THE CASUALTIES OF 1899 WITH THOSE OF 1898.

COUNTIES.	1898.				1899.				Total.	
	Fatal.	Serious.	Non-serious	Total.	Fatal.	Serious.	Non-serious.	Total.	Gain.	Loss.
Carbon .....	3	4	8	15	none.	5	32	37	22	.....
Emery .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Summit.....	.....	.....	2	2	.....	.....	2	2	.....	.....
Iron .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Pete .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals.....	3	4	10	17		5	34	39	22	

It may be well to state that about one-half of these accidents are very slight, a greater part of the men not losing a week's work through their injuries.

# MINES WHICH GENERATED LIGHT CARBURETTED HYDROGEN GAS (Fire Damp.)

CASTLE GATE, SUNNY SIDE—Carbon County.

GRASS CREEK—Summit.

TABLE SHOWING THE NUMBER OF MINES EMPLOYING THE VARIOUS METHODS OF VENTILATION AND THE THREE KINDS OF OPENINGS.

COUNTIES.	CHARACTER OF OPENING.				Total.	MODE OF VENTILATION.				Natural.	Small, Method Not Known.	Total.
	Drift.	Shaft.	Slope.	Small M. Kind of Opening not known.		Fan.	Furnace.	Fire Basket.	Steam Jet and Exhaust from Pump.			
Carbon .....	17	...	2	...	19	7	...	...	...	12	...	19
Emery .....	12	...	...	...	12	...	...	...	...	12	...	12
Summit .....	3	...	5	...	8	...	1	1	...	6	...	8
Iron .....	13	...	...	...	13	...	...	...	...	13	...	13
Grand .....	6	...	...	...	6	...	...	...	...	6	...	6
Sanpete .....	5	...	1	...	6	...	...	...	...	6	...	6
Uintah .....	38	...	...	...	38	...	...	...	...	38	...	38
Total .....	94	...	8	...	102	7	1	1	...	93	...	102

## FEES COLLECTED FOR INSPECTION OF COAL MINES.

NAME OF MINE.	Where Located.	Amount.
Winter Quarters.....	Scofield .....	\$ 50.00
Castle Gate .....	Castle Gate .....	40.00
Grass Creek.....	Grass Creek.....	30.00
Wasatch .....	Coalville .....	30.00
Manti Coal Company.....	Manti .....	20.00
Sterling Coal Company .....	Manti .....	20.00
St. Lewis .....	Ft. Duchesne.....	20.00
Clear Creek .....	Clear Creek .....	20.00
Sunnyside.....	Sunnyside. ....	20.00
Bortholomew .....	Vernal .....	10.00
Rich .....	Vernal .....	10.00
Mill .....	Vernal .....	10.00
Total .....	.....	\$280.00

TABLE SHOWING LOCATION, ETC., OF COAL MINES IN UTAH.

NAME OF MINE.	NAME OF OPERATOR.	COUNTY.	NAME OF SUPT.	POST OFFICE ADDRESS.	NAME OF RAILROAD.
Winter Quarters No. 1.....	P. V. Coal Co.....	Carbon	Thomas J. Parmley.....	Scofield.....	R. G. W. R. R.
Winter Quarters No. 2.....	P. V. Coal Co.....	Carbon	Thomas J. Parmley.....	Scofield.....	R. G. W. R. R.
Winter Quarters No. 4.....	P. V. Coal Co.....	Carbon	Thomas J. Parmley.....	Scofield.....	R. G. W. R. R.
Castle Gate.....	P. V. Coal Co.....	Carbon	Frank Cameron.....	Castle Gate.....	R. G. W. R. R.
Clear Creek.....	P. V. Coal Co.....	Carbon	H. B. Williams.....	Clear Creek.....	R. G. W. R. R.
Sunny Side.....	R. Forrester, Agent.....	Carbon	Jos. A. Sharp.....	Sunny Side.....	R. G. W. R. R.
Aberden.....	Whitmore Bros.....	Carbon	A. Ballinger.....	Price.....	R. G. W. R. R.
Deeriet.....	Deseret Coal Co.....	Carbon	H. Carlston.....	Fairview.....	R. G. W. R. R.
Connelsville.....	S. K. Harkness.....	Carbon	S. J. Harkness.....	Scofield.....	R. G. W. R. R.
Grass Creek.....	Grass Creek Coal Co.....	Summit	W. L. Hansen.....	Coalville.....	R. G. W. R. R.
Wasatch.....	Weber Coal Co.....	Summit	T. J. Lewis.....	Coalville.....	R. G. W. R. R.
Wilson.....	Salt Lake Coal Co.....	Summit	John Dexter.....	Salt Lake City.....	R. G. W. R. R.
Dexter.....	Dexter & Sons.....	Summit	Wm. Boyer.....	Coalville.....	R. G. W. R. R.
Huffman.....	Wm. Huffman.....	Summit	Wm. Huffman.....	Coalville.....	R. G. W. R. R.
Thomas.....	Sterling Coal & O.....	Sanpete	H. S. Kero.....	Coalville.....	R. G. W. R. R.
Edmonds.....	Manti Coal Co.....	Sanpete	L. Tuttle.....	Coalville.....	R. G. W. R. R.
Cluff.....	Cluff & Co.....	Sanpete	W. W. Cluff.....	Manti.....	R. G. W. R. R.
Corry.....	Andrew Correy.....	Iron	Andrew Corry.....	Coalville.....	Sanpete Valley R. R.
Cedar Creek.....	Grange & Gardner.....	Iron	S. S. Grange.....	Cedar City.....	.....
Black Baby.....	Hartman & Co.....	Grand	J. T. Faer.....	Cedar City.....	.....
Ballard.....	Ballard Bros.....	Grand	H. G. Ballard.....	Green River.....	R. G. W. R. R.
Bear Canyon.....	Don Robins & Co.....	Grand	Don Robins.....	Thompson.....	R. G. W. R. R.
Rich.....	Joe Rich.....	Emery	Don Robins.....	Provo.....	.....
Bartholomew.....	A. Bartholomew.....	Utah	Joe Rich.....	Vernal.....	.....
Mill Mine.....	Vernal Mining Co.....	Utah	A. Bartholomew.....	Vernal.....	.....
Timothy.....	A. Timothy & Co.....	Utah	Wm. Sidway.....	Vernal.....	.....
Edwards.....	Thomas Edwards.....	Utah	A. Timothy.....	Vernal.....	.....
Rasmussen.....	E. Rasmussen.....	Utah	Thos Edwards.....	Vernal.....	.....
Janes.....	Ike Janes.....	Utah	E. Rasmussen.....	Vernal.....	.....
Collett.....	R. Collett.....	Utah	Ike Janes.....	Vernal.....	.....
Davis.....	D. F. Stanton.....	Utah	R. Collett.....	Vernal.....	.....
		Utah	D. F. Stanton.....	Vernal.....	.....

There are thirty other mines (small) in the Vernal District in Ashley Valley.

## WINTER QUARTERS MINE.

Winter Quarters mine is the property of the Pleasant Valley Coal Company, and is situated about sixteen miles up a canyon off the main line on a branch of the Rio Grande Western Railway from Colton.

This mine is under the supervision of T. J. Parmly, and is one of the oldest mines in the State of Utah, and the largest producer, producing in 1899 438,107 short tons, using 4400 kegs of powder, an increase of 124,256 tons. It employs 342 men. Average number of days worked was 305 in 1899.

The mine is artificially ventilated with a Guibal exhaust fan, running at the rate of 55 revolutions per minute, producing 45,000 cubic feet of air per minute, which is distributed to all the working places in the mine. All coal is hauled on main haulage-ways by a Thompson-Houston hoist.

The improvements made at this mine during 1899 are: Large sidetracks inside of mine, one new chute, 3 77x16 boilers, power line, stokers for each boiler, boiler-house, large boarding-house and one large bunk-house.

My first official visit of inspection was on January 9th to 13th. The mine was working full time, with good ventilation. On the 12th of January was our first experience with trouble with the eight-hour law. The drivers came out dissatisfied with going in and out of the mine on their own time. They demanded 25 cents of advance per day, or go in and out of the mine on the company's time. They were out one day. They decided that they would go in on the company's time and come out on their own time. On this visit I found lots of water in the man-way, making it inconvenient for the men to go and come from their work. I suggested to Superintendent T. J. Parmley that this be fixed at once, which was done immediately.

My second visit of inspection was on March 14th to 17th. I found the mine working full time, with the usual number of men, with mine working two shifts. On this visit I found a number of the stopings on main entry leaking, which caused a scarcity of air in the working places. I took the foreman and showed him this, and he had it repaired at once.

On my third visit of inspection to this mine, June 9th to 12th, I examined the mine inside and out. I found it in a good condition, but not working full time. I found plenty prop and cap pieces placed near the working places, in accordance with the law. The fan was running at a rate of a little less than fifty-five revolutions, producing 5,000 cubic feet per minute. The mine was drained properly with all working and traveling places dry.

My fourth official visit of inspection was July 12th to 14th. On this visit I inspected the mine in and out. The mine was working one shift and not full time. The superintendent was making lots of repairs, preparing for the fall trade. I found the mine, in general, in a very fair condition.

My fifth visit of inspection was July 28th to 30th. On this visit I examined only the main traveling ways and a few of the working places. I found all the traveling ways in good condition. The mine working a little better than on previous visits.

On my sixth visit of inspection, October 17th and 18th, I examined the mine inside and out. They were working two shifts, with 375 men. I found the mine in good condition, with ample props and cap pieces near the working places. All miners were getting all the work they could do, and the company could not fill all their orders for the want of more miners. The ventilation was fairly good considering the amount of powder used in the mine.

All shots are fired in this mine by the miners at any time.

My seventh official visit was December 2nd to 5th and 6th. On this visit I inspected Winter Quarters No. 1, No. 2 and No. 4. All the mines were working full time, and all the men they could get, and all in good condition with good air, and all drainages were in good shape, and all employees working eight hours. The run of mine No. 1 on this date was 2,000 short tons.

#### WINTER QUARTERS NO. 4.

This mine is the property of the Pleasant Valley Coal Company, and is situated about one-quarter mile north

of No. 1. It is a new mine which has been opened during this year. All the work has been done under the supervision of Mine Foreman William Parmley.

This mine was one of the most difficult mines to open in the State. The graders who were grading for a tramway to the mine, put in a big blast which cracked the rock and earth at the mouth of the tunnel, causing a big slide of thousands of tons of rock and dirt, making it very difficult to timber and drive.

The mouth of the tunnel had to be secured with rock walls and cribs, which was done, and in a manner creditable to the mine foreman, William Parmley.

The coal is run down an incline 1,400 feet to the railroad.

The mine started on the 23rd day of June, 1899. The main entry is now in 1,900 feet, and the mine is now producing 500 tons per day.

#### PLEASANT VALLEY MINE.

This mine is situated at Scofield, Carbon county, and is the property of the Union Pacific Coal Company, and is under the supervision of G. L. Black, Superintendent Union Pacific Coal Department, Rock Springs, Wyo.

This mine has been idle since June, 1897.

#### THE CASTLE GATE MINE.

The Castle Gate mine is the property of the Pleasant Valley Coal Company, and is situated at Castle Gate Station, 108 miles south of Salt Lake City, in Carbon county, on the Rio Grande Western Railway.

This mine is the largest mine in the State and has thirty miles of track in and out of the mine. The average number of men employed daily inside and outside is 328, and was in operation 269 days during 1899.

The production of this mine for 1899 was 295,696 short tons of coal and 26,671 tons of coke, showing an increase of 33,868 short tons of coal over 1898.

Artificial ventilation is furnished for the mine by a fifteen-foot Capell patent fan. This fan is running at the rate of 120 to 130 revolutions per minute and producing 105,000 cubic feet to 110,000 cubic feet per minute,



with water gauge at "4," which is plenty to keep the mine in a clean and healthy condition. The fan can be speeded up to 250 revolutions per minute, making about 215,000 cubic feet of air per minute, with the water gauge at "6."

It was suggested by the writer on his last visit in 1898 that this company should put in a larger fan, make their air courses larger in places, clean and timber them; he also suggested that they should put on a man trip for the convenience of their employees—all this the management has cheerfully complied with, which makes this mine the best ventilated mine in the State. A great deal of credit for placing this mine in its present condition should be given to Frank N. Cameron, their superintendent.

To guard against any dust danger, the management has put in water and steam sprays to keep the mine damp.

The coal is dug in the mine by being first undermined and shot off with Hercules powder, of which they used 38,450 pounds during the year 1899. All shots are fired by electricity, when all men are out of the mine, which I think is the safest way to mine coal where dust is explosive.

All coal is hauled on the main haulage-ways in the mine by Thomson-Houston electric hoists. The power for the hoists is furnished by a large plant on the outside, consisting of two 22x22 McEwan engines connected to one 225 Thompson-Ryan dynamo, nine 72x16 boilers.

The improvements made during the year 1899 was one 22x22 McEwan engine connected to one 225 Thompson-Ryan dynamo, three 72x16 steel boilers and steel water heater, one Capell patent fan and buildings, seven stokers, boiler-house and power line from power-house into mine.

The Pleasant Valley Coal Company has expended for improvements on their new and old mine during 1899 over \$350,000.

My first official visit to this mine in 1899 was January 13-19. The mine was working every day, with 240 miners. The employed inside and outside, 410 men. On this visit I found a small feeder of carburetted hydrogen gas in the face of the thirteenth rise entry. There was

no standing gas in the mine, for the fan was producing 75,635 cubic feet per minute.

My second official visit was February 21-24. I examined the mine inside and outside, and found everything in good condition. Mine working every day, with about the same number of men as on my first visit.

On my third visit of inspection, June 3rd to 7th, I examined the mine inside and outside. I found gas in two different places in the mine; it was not dangerous. There was no standing gas in the mine. The cause of the small amount of gas that has just accumulated was that the canvas had been down over night and prevented the air from reaching the face of the room.

The mine in general was in a fair condition, with the fan producing 68,010 cubic feet of air per minute, which was hardly enough to keep the mine cool.

There were 384 men working inside and outside (and 31 men at the coke ovens). I also found that the management had commenced excavation for the new fan and boilers.

My fourth visit of inspection was July 8th to 12th. I examined the mine inside and outside. I found little gas in room 17, off tenth level of second raise. They were working full time, with ventilation fairly good.

My fifth visit was July 16th to 19th. I examined the mine inside and outside. They were working 210 miners.

My sixth visit to the mine was on December 12th. I found it clear from all gases and everything working all right, with the new fan nearly completed, the old fan producing a little over 73,000 cubic feet of air per minute.

The management has on hand plenty of suitable timber for props and caps near the working places.

The management of this mine is to be commended for the systematical way this mine is worked and the precautionary methods adopted for the safety and comfort of the employees.

### SUNNYSIDE MINE.

This mine is the property of the original locators, with Robert Forrester as agent, and is situated about seventeen miles from Mounds, on a branch of the Rio Grande Western Railroad.

This mine has been opened up during 1899. The coal in this mine has better coking qualities than any other coal in the State so far opened. The company intends to build a large coking plant in the spring, at the mine. The vein is seven feet thick, with a very small dip to the north-east.

This mine is already equipped with two steam hoists and two boilers, two 15-foot fans and buildings, one dynamo producing 600 lights, and the company has built one barn with room enough for seventy-five horses, two oil-houses, one large hotel that will accommodate 100 men. The hotel is furnished with electric lights and baths; also twenty miners' cottages with electric lights, and one large store.

The product of this mine for 1899 was 11,179 short tons. The number of days worked was 183, with 72 men. The company now ships ten cars of this coal per day to the coke ovens at Castle Gate to be made into coke, and will do so until the ovens at the mines are completed.

I made two official visits to this mine in 1899. I found the mine in a safe condition, with plenty of air in the mine distributed to the working places. I also found that the dust of this mine is explosive, and suggested that they should put in a water system and sprays to keep the dust damp, in order to prevent danger.

On my last visit I found that the company had complied with all this. I also found that they had their air-ways and escapement-ways in good condition as required by law, also with prop and cap pieces within 100 feet of the working places.

This mine used 500 kegs of powder this year, part of it being used in driving rock tunnels.

#### CLEAR CREEK MINE.

This mine is operated and owned by the Pleasant Valley Coal Company, and is situated seven miles south of Scofield Station, on a branch of the Rio Grande Western Railroad.

This mine is a new one. The coal was found about the middle of June, 1899. On the 5th day of July there was a force of men sent there to start the main entries, under H. L. Thomas as their foreman. This mine has

been opened up in shape to ship coal in less time than any other mine in the West. The main entries were started on the 6th of July, and by the middle of November the mine was producing 500 tons per day. The vein is fourteen feet thick.

The improvements of this mine consist of one 15-foot exhaust fan, two boilers, small engine and dynamo, which will produce about 600 lights. The company has also built one large, new, modern hotel, with electric lights and baths, large enough to accommodate 150 men; twenty-five-room modern houses, with electric lights; one barn and workshop combined, with room for fifty horses; one large store, also a water system. Besides this, the Finlanders have built a large hotel and several houses of their own.

This mine is worked by the double-entry system. It is well ventilated and has a water system to sprinkle the dust; this was put in through the suggestion of the writer, as the dust was deemed explosive.

My first official visit to the mine was July 14th. I made three more visits during the year and found the mine in good shape and working order and the dust kept damp.

The number of men employed in this mine for the year was 200; number of days worked, 214. The production of coal was 28,284 short tons, using 1164 kegs of powder. The management should be commended for the comfortable and well-ventilated way in which they run the mine.

### WASATCH MINE.

The Wasatch mine is situated in the Coalville-Grass Creek district, in Summit county, on a spur of the Echo & Park City branch of the Union Pacific Railway, and about three miles east of Coalville. This mine is owned by the Weber Coal Company of Salt Lake City.

There has been no improvements at this mine during 1899. The product of this year was 22,746 short tons, with an increase of 7,313 tons over 1898. All coal mined during the year was taken from old pillars, which makes the mining very difficult, as they have to handle so much more slack and dirt than if they were working in the

rooms and entries. They used thirteen kegs of powder in 1899. The reason for taking the pillars out is, that they have been left for years standing by the old management. It is necessary now to take them out, as they crumble and cause a heat and take fire, which makes things very inconvenient for the present management. The mine worked during the year 164 days, employing thirty-two men.

My first official visit to the mine in 1899 was January 23rd. I found the mine in a fair condition under the circumstances, as it is impossible to keep the mine as cool as others, as they are troubled a great deal with gob fires. The mine was furnished with ample supply of prop and cap pieces, and a sufficient amount of air.

My second visit was on May 6th. I found thirty men working, inside and outside. Superintendent T. J. Lewis informed me that they had been troubled with another small gob fire, and when they discover one of those "gob fires," they use a little water to dampen around and check the fire, and all material is then loaded out from around it and taken outside.

My third visit, on July 6th, I found the mine in good working condition, but working less than half time.

My fourth visit, October 27th, I examined the mine inside and out. I found it in a fair condition, with plenty of prop and cap pieces at the working places, with the mine working about four days a week.

The coal is sold to local trade of the surrounding towns and Park City.

T. J. Lewis, as mine Superintendent, has run this mine in a careful and creditable way, working to the comfort and health of the employees and against all possible accidents, only one man being injured during 1899.

### GRASS CREEK MINE.

The Grass Creek mine is owned by the Grass Creek Coal Company, and is situated on the Grass Creek Terminal Railroad, six miles off the Echo & Park City branch of the Union Pacific Railroad.

The improvements of this mine for 1899 were: One set of shaking screens, ten mining cars, three miners' cottages, one large lodging-house, one schoolhouse for the

accommodation of the miners' children—total cash, \$3,250.

The product of this mine for 1899 was 20,400 short tons, an increase over 1898 of 11,262 tons. They worked 247 days during the year, employing forty men and using 408 kegs of powder.

This mine has natural ventilation, which is very poor; it does not comply with the law.

On my first official visit, January 6th, I requested the management to put in a fan, which they promised to do. I also found the room not properly timbered and requested it be timbered immediately. The mine was working full time, with about thirty-five men.

My second official visit was on May 5th. I went through the mine and examined it, and found that things were in a better condition than on my last visit. The mine was working full time, with twenty men.

My third visit was on July 7th. I found the mine in a very good condition—mine working very little. The management was making improvements for winter trade.

My fourth visit was October 27th. I examined the mine inside and out, and found it as well ventilated as could be expected by natural ventilation. On this trip I requested that the fan be put in at once, which they promised to put in use in February, 1900. The coal from this mine is sold to local Salt Lake and Park City.

### THOMAS MINE.

The Thomas mine is owned and operated by the Sterling Coal & Coke Company, of Salt Lake City, and is situated six miles south of Manti, on the terminal of the Sanpete Valley Railroad.

During the year 1899 a very small force of men was at work on this property.

The vein they now have is small, and the company has spent most of the time prospecting for the larger vein, and for that purpose spent several thousand dollars during the year 1899.

They employed five men during the year, working 300 days, and producing 3,075 tons.

The mine has natural ventilation.

I made three official visits of inspection to this property during 1899, and on each visit found the mine in a good condition, and safe in every respect.

#### DESERET MINE.

The Deseret mine is owned and operated by the Deseret Coal & Coke Company of Manti, and is situated in Huntington Creek, Carbon county, Utah, thirteen miles from Fairview, on a branch of the Rio Grande Western Railroad.

The coal is a fair coking coal, and is hauled by team into Sanpete valley for local trade.

This mine is situated in one of the best coal fields in the State of Utah.

The output of this property for the year 1899 was 2,500 tons.

The company has expended \$700 on improving the property during the year 1899.

#### ABERDEEN MINE.

The Aberdeen mine is owned and operated by Whitmore & Ballinger of Price, Carbon county, Utah, and is situated twelve miles northeast of Price. It is merely a prospect, and the coal is mined for local trade only, being consumed by the people in and around Price.

The coal is of a good quality and quite a large vein. The production for the year 1899 was 600 tons; the number of days worked was 200, with two men employed. Ten kegs of powder used.

#### EDMONDS MINE.

The Edmonds mine is situated six miles south of Manti, and is owned and operated by the Manti Coal Company. It has natural ventilation, and employed three men 200 days during the year 1899, the output being 1,800 tons, which was sold to local trade.

### CEDAR CREEK MINE.

The Cedar Creek mine is situated near Huntington, Emery County, Utah, and is owned and operated by Grange and Gordon of Huntington.

The coal from this property is sold to local trade in Castle Valley, and has good coking qualities. The production for the year 1899 was 550 tons, working three men 200 days.

### COREY MINE.

The Corey mine is situated near Cedar City, Iron County, Utah, and is owned and operated by Andrew Corey of Cedar City.

The coal taken from this property is sold to the local trade. The production for the year 1899 was 425 tons, working four men 150 days. The improvements at the mine were the driving of 150 feet of new tunnel and the building of a dwelling-house, the total cost of which was \$300.00.

### FAIRVIEW MINE.

This mine is situated about one-quarter mile south of the Deseret mine, in Huntington Creek, thirteen miles from Fairview, and is owned by a New York company. It is under the management of S. J. Harkness.

The output from this property during the year 1899 was 300 tons. The coal is hauled into Sanpete Valley for local trade.

### BLACK BABY MINE.

The Black Baby mine is situated near Green River, Grand County, Utah, on the Rio Grande Western Railway. It is owned by the Black Baby Mining Company, with J. T. Tanner, manager.

This mine produced during the year 1899 300 tons of coal, which was sold to the local trade; four men were employed, working sixty days.



### CLUFF MINE.

The Cluff mine is situated near Cedar City, Iron County, Utah, and is owned by W. W. Cluff of Coalville, Summit County, Utah.

The mine is merely a prospect, and but very little work was done in the year 1899. The second opening is nearly completed.

The number of men employed was two, working eighty days, producing 150 tons. Mr. John Dutton is in charge.

### DEXTER MINE.

The Dexter mine is situated one mile southeast of Coalville, Summit County, Utah, and is owned and operated by John Dexter of Coalville. It is the second oldest mine in the State of Utah.

There has been a good deal of trouble over this property. The writer remembers the time when Mrs. Dexter had to stay on guard at the mouth of the tunnel while her husband was working inside the mine. They are now the owners of the mine. They have worked this mine over thirty years; the coal is sold mainly to local trade. The output this year was 110 tons.

### BOYER MINE.

The Boyer mine is owned by William Boyer, and is situated about thirteen miles east of Coalville, on Chalk Creek.

The coal from this mine is of a good quality, but on account of the railroads being so far away the mine is worked but very little, producing only 100 tons of coal in 1899.

### ASHLEY VALLEY, UINTAH COUNTY, MINES.

The following is a list of the mines and operators of Ashley Valley, near Vernal, Uintah County, Utah:

Name of Mine	Name of Operator.	Address.
Davids.....	Stewart & Davids.....	Vernal, Utah
De Freeze.....	DeFreeze & Sons.....	Vernal, Utah
Rich Mine.....	Joseph Rich .....	Vernal, Utah
Bartholomew....	Lon. Bartholomew .....	Vernal, Utah
Timothy.....	Alma Timothy .....	Vernal, Utah
Edwards.....	Thomas Edwards .....	Vernal, Utah
Mill.....	The Mill & Mining Co....	Vernal, Utah
Rasmussen.....	Ephraim Rasmussen ....	Vernal, Utah
Jones.....	I. R. Jones.....	Vernal, Utah
Collett.....	Richard Collett .....	Vernal, Utah
Haddock.....	Bert Height .....	Vernal, Utah
Campbell.....	Campbell & Sons.....	Vernal, Utah
Brown.....	George Brown .....	Vernal, Utah
Dodds.....	Gordon Dodds .....	Vernal, Utah
Anderson.....	Nancey Anderson .....	Vernal, Utah
Gibson.....	William Gibson .....	Vernal, Utah
Thorne.....	Thorne Bros.....	Vernal, Utah
Hallinger.....	Hallinger & Jensen.....	Vernal, Utah
Brown.....	Edward Brown .....	Vernal, Utah
Green.....	Riley Green .....	Vernal, Utah
Glines.....	McKerron & Torkman...	Vernal, Utah
Hodgkinson....	Hodgkinson & Sons.....	Vernal, Utah
Pittsburgh.....	Oakes & Brown.....	Vernal, Utah
Oakes.....	Edward Oakes .....	Vernal, Utah
Woods.....	Woods & Noble.....	Vernal, Utah
Merkley.....	Merkley & Johnson.....	Vernal, Utah
Dauids.....	Dauids & Stanton.....	Vernal, Utah
Wardle.....	Wardle & Sons.....	Vernal, Utah
Glines.....	Charles Glines .....	Vernal, Utah
Bowden.....	Bowden & Sons.....	Vernal, Utah
Blakely.....	Richard Blakely .....	Vernal, Utah
Thompson.....	John Thompson .....	Vernal, Utah
Bradshaw.....	Bradshaw & Colton.....	Vernal, Utah
Merkley.....	Merkley & Bros.....	Vernal, Utah

All of these mines are working more or less, and each one producing a small amount of coal, which is used in the surrounding valley. The amount produced during the year 1899 was 6450 tons.

#### ECCLES CANYON COAL COMPANY.

The property of this company is situated at Hales,

about six miles north of Scofield, Carbon county, Utah, and is owned and operated by the Eccles Canyon Coal Company, of Salt Lake City, with Hyrum Smith superintendent.

The mine is merely a prospect, and has four and one-half feet of good coal, employing six men. They are about prepared to ship coal.

#### ACCIDENTS DURING YEAR 1899.

January 3, 1899—Charles Lappe, a miner, was injured in Winter Quarters mine by a piece of coal falling from the face of the room, striking him on the left leg, causing a fracture of clavicle and dislocation of ankle.

January 14, 1899—Antonion Oldratto, a miner, was injured in Castle Gate mine by about 1,000 pounds of coal falling upon him, causing a scalp wound and posterior on left side of head, fracture of right nasal bone and dislocation of shoulder.

January 27, 1899—Archibald Black, a timberman, was injured in Castle Gate mine by a rock falling upon him, causing an oblique fracture of the left humerus.

January 27, 1899—Robert Gatherum, a miner, was injured in Winter Quarters mine by a piece of coal falling and striking him on the foot, causing a fracture of the fourth metatarsal of right foot.

January 30, 1899—George DeWitt, a miner, was injured in Winter Quarters mine by a piece of clod falling from the roof and striking him on the left foot, causing a fracture of the fourth metatarsal and fourth toe on left foot.

February 2, 1899—E. J. Witcherly, a driver, was injured in Winter Quarters mine by being caught between the mine cars, causing a sprained back.

February 3, 1899—Levi Wright, a driver, was injured in the Wasatch mine, Coalville, by some coal falling on him while he was in the act of leveling the coal on the car, causing a scalp wound about two inches long on the right side of the head; cut on forehead about one and one-half inches long, and little finger of right hand bruised and cut.

March 16, 1899—Joseph Baldy, a miner, was injured in Castle Gate mine by being burned. The dust,

caused by a bounce, was ignited by his lamp, burning his face and arm slightly.

March 17, 1899—F. J. Hill, a box-car loader, was injured at Castle Gate mine by coal coming down a chute and striking him on the right side, causing fracture of tenth rib and severe contusion of crest on right hip.

March 30, 1899—Dennis Scanlan, a miner, was injured in Winter Quarters mine by some slate falling upon him from the roof, striking him on the back, causing a severe bruise of back from shoulder to, and including, lumbar region, and severe bruise of chest and hip.

March 31, 1899—Matt Madson, a miner, was injured in Winter Quarters mine by some coal falling on him, causing a laceration of scalp on right side of head, and slight bruise on right ribs and chest.

April 3, 1899—Peter Godardy, a miner, was injured in Castle Gate mine by some coal falling upon him, causing a compound fracture of tibia and fibula of right leg; also a simple fracture of radius, and large scalp wound on back of head.

April 12, 1899—George L. Jones, a track-layer, was injured in Winter Quarters mine by getting his finger caught in the automatic switch, causing a compound fracture of third phalange of little finger of right hand.

April 19, 1899—A. Wilson, Sr., a miner, was injured in Winter Quarters mine by a prop falling upon his hand, causing a fracture of fifth metacarpal bone at its junction with first phalange of little finger of right hand.

May 2, 1899—J. H. Layne, a driver, was injured in Winter Quarters mine. His horse fell down and Laynes' foot was caught between the gun and the bumper of the car, crushing the foot so bad that amputation was necessary.

July 28, 1899.—David T. Evans, a miner, was injured in Winter Quarters mine by some coal falling and striking him on the left side, severely bruising the left thigh, and a fracture of the right fibula near ankle.

August 12, 1899—Dominici Precco, a miner, was injured in Castle Gate mine by some coal falling upon him, causing severe bruises around the left lumbar region.

August 18, 1899—James Walker, a miner, was injured in Winter Quarters mine by some coal falling upon

his foot, causing severe bruise and laceration of right foot.

August 21, 1899—George Cheshire, a teamster, was injured at Castle Gate mine by being thrown from his wagon, causing sprained ankle.

August 26, 1899—Chris Halvorsen, a driver, was injured in Castle Gate mine by being caught between the shafts on the horse and a prop, causing severe contusion of the tibia at the anterior and middle portion of the bone; laceration of over-laying tissues.

August 28, 1899—James Hincley, a driver, was injured in Castle Gate mine by some rock which fell upon him, causing a slight contusion of lumbar region on back and slight bruises on left side.

September 4, 1899—William Louma, a miner, was injured in Winter Quarters mine by coal falling upon him, causing contusion wound over junction of dorsal with lumbar vertebrae; complete motor paralysis, and partial sensory paralysis of both legs; also wound on scalp.

October 17, 1899—Daniel Pitman, a miner, was injured in Winter Quarters mine by some rock falling from the roof, striking him on hip and back, causing a slight contusion over sacrum and bruises on hip.

October 20, 1899—Thomas Dumayne, a rope-runner, was injured in Winter Quarters mine by being knocked down and run over by three empty mine cars, causing cut on right ear, laceration of skin on both legs, between the knee and ankle.

October 20, 1899—Edward Snow, a driver, was injured in Clear Creek mine by being caught between the car and rib, causing bruises on chest and shoulder, right side; also bruises on right side of head.

October 28, 1899—Alphonzo Franklin, a miner, was injured in Winter Quarters mine by some coal falling upon him, causing fracture of radius of right arm.

October 28, 1899—Enoch Lange, a miner, was injured in Castle Gate mine by some coal falling upon him, causing a fracture of tibia and fibula of right leg.

November 17, 1899—Mike Conley, a driver, was injured in Winter Quarters mine. His hand was caught between the bumper of the car and the shafts of the horse, severely bruising it.

November 19, 1899—D. R. Williams, a common laborer, was injured at Winter Quarters mine. A large rock rolled on his left leg, causing a deep cut between the knee and ankle, about seven inches long.

December 5, 1899—Nicholas Castello and Michael Larger, miners, were injured in Sunnyside mine by being burned with the flames from a shot. Their hands and faces were slightly burned.

### THE CASTLE VALLEY COAL FIELDS.

On my official visit, in July, 1899, through the coal fields of Castle Valley, I found that this section of the State contained the largest coal fields, and equal in quality to any other field in Utah.

The time has come to open up the coal fields of Castle Valley, in competition with other fields for the supply of Southern Utah, Nevada and Southern California.

The advantage these fields have over others is the unsurpassed quality and the unlimited quantity. The coal is a good coking coal, and is the nearest coking coal to our great iron fields, in Southern Utah, which in the near future, will be one of the largest iron producers in America (another Pittsburg).

The veins are of the most desirable thickness, and lay sloping in the right direction for economical draining. The roof over the coal is of the most desirable formation; the coal can be worked by drifts from the bottom of the canyon.

There is plenty of timber for mine uses in the surrounding hills; there is plenty of room for tracks and switches in all the canyons. The coal can be taken out by gravity, and the coal fields can be reached by rail, with slight grade.

All that is needed to make these fields superior to others is organized capital to operate them on a large scale.

The coal through these fields appears in several veins, from three feet to fifteen feet thick; there are two well defined veins which extend along the face of the mountains, for eighty miles long by twenty miles wide, on the eastern slope of the Wasatch range of mountains to Emery and Carbon counties. The lower vein runs from

eight feet to twelve feet in thickness; above this is a sandstone for sixty feet, with a streak of fire-clay separating the sandstone from the second vein. This vein is from six feet to eight feet in thickness, covered with slate, above which is heavy sandstone several hundred feet in thickness.

These veins slope toward the canyon and afford perfect facilities for gravity and drainage. Some of this property has been sufficiently developed to show the abundance of coal, its quality, etc.

#### SOME OF THE OPENINGS ARE AS FOLLOWS:

Bear Canyon, where both veins are opened up; Trail Canyon; Riddle's Canyon; Mill Fork; Tie Fork; Cradle Canyon; Cedar Creek and Ferron, and in several other places there are small openings.

An analysis of this coal shows the following:

Water .....	3.7 per cent
Volatile matter.....	43.3 per cent
Fixed carbon.....	48.9 per cent
Ash .....	4.1 per cent

Showing the coal to be of good quality.

The nearest railroad to these coal fields is the main line of the Rio Grande Western, with its nearest point at Mounds, thirty miles distant.

With the proposed new railroad from Mounds, on the main line, that is surveyed and partly graded, through Castle Valley, from Salina Canyon to Salina on the Sanpete branch of the Rio Grande Western, will bring this coal field within ten miles of the railroad at Huntington. The distance from Huntington to the center of the iron beds is about 150 miles.

The coking qualities of the Castle Valley coal have been a commercial success at two widely-separated localities. This coal is admirably adapted for long hauls to market, and being hard stands the weather well.

The fact of the matter is, that when any corporation commences to work the iron ores of Utah, the fuel for the operation will come from the Castle Valley coal fields.

On the east side of Castle Valley, we find the same

formation, with several well-defined veins and a little better quality of coal.

There are several well-defined veins extending along the face of the mountains, from Castle Gate to the Utah and Colorado line; a distance of 175 miles to the northeast along the line of the Rio Grande Western Railway.

On the north end of these fields, we find the old reliable Castle Gate mine. Fifteen miles further south we find the Aberdeen mine; and thirty miles further southeast, we find the celebrated Sunnyside mine, which is a No. 1 coking coal; and in all the canyons from here to the State line, we find the coal cropping out.

### IRON COUNTY COAL FIELDS.

These coal fields are situated in the southeastern part of Iron county, near Cedar City.

This coal has been prospected more or less since 1855, and coal has been taken out for domestic uses, continually, since its discovery.

During the year 1899 there has been a great deal of prospecting, and a great many new mines opened.

Eastern syndicates have been in this county, taking up and bonding a great many claims, which makes Iron county look very prosperous.

This county is also noted for its mountains of iron. Near Cedar City are large bodies of magnetic and hematite ores.

### WHAT EASTERN EXPERTS SAY ABOUT IT.

Mr. R. B. Dean, who has been connected with the Lake Superior iron mines, says:

"I believe there is a great future for the Utah iron deposits; the cheapness with which the ore can be mined is especially noted; and I do not hesitate to say that I could load 3000 tons a day with a steam shovel, such as is used in the Lake Superior districts. Of course, the wash at present overlying the great vein would have to be removed. In order to do this is a matter of little moment.

"I am satisfied that there is nothing in the way of one of the largest iron industries being started in Utah."



Mr. Dean and associates have located about twenty claims, through which an iron deposit extends which is nearly 800 feet wide.

An average of fifty-four samples was taken some time ago, and the tests show 62 per cent iron, with no sulphur.

They secured 600 acres of iron and 640 acres of coal land, on which they are doing prospect work.

### HYDRO-CARBONS OF UTAH.

Not only is Eastern Utah, but also Southern Utah, rich in gold and silver, lead and copper; but also in carbons and hydro-carbons.

Utah's coal measures cover over 30,000 square miles.

### THE GILSONITE INDUSTRY.

The gilsonite industry has already reached extensive proportions. The chief mines are situated at and near Fort Duchesne, Uintah county, Utah. It occurs in fissures, in the red and gray sandstone; the veins are from a few inches to six feet in width, and very easily mined. The product mined is sacked and shipped from 75 to 100 miles to Price Station, on the Rio Grande Western Railway, from which point it is shipped to different points all over the United States and Europe.

Gilsonite is simply a chemically pure asphaltum, perfectly dry and very brittle and breaks with a resplendent fracture. It is used in the manufacture of varnish, lacquers and mineral paints, for wood and metal; also in coating the sides and bottoms of merchant vessels and man-of-war ships.

The price of this mineral is about \$60 per ton, and there is a continually increasing demand for it all over the world.

### OUR PRINCIPAL GILSONITE MINES ARE

The St. Louis Gilsonite and Asphaltum Company mine at Fort Duchesne. This mine produced 1,500 tons of gilsonite during the year 1899; the Parette mine, owned

by Culmer Bros., of Salt Lake City, Utah, thirty miles southwest of Fort Duchesne, which produced 712 tons during the year 1899; the Raven mine, owned by the Raven Mining Company of Illinois, with Judge McConville as general manager. This mine is fifty miles east of Colton Station, on the Rio Grande Western Railway, and produced during the year 1899 150 tons. There are several other small mines of this character too numerous to mention.

### OZOCERITE.

Ozocerite, which is a mineral kindred to gilsonite, is what may be literally termed a mineral wax. In color it is a blackish brown, very dry, but of a greasy feeling.

By a chemical process it is treated so as to produce a beautiful white wax, used in the wax-flower industry; also in making taper or candles, and in electrical lines.

Although in quantity Ozocerite is not as abundant as gilsonite, yet the quantity produced is considerable, and the price much greater than that paid for gilsonite.

The principal locality from which ozocerite is taken is Soldiers' Summit, on the Rio Grande Western Railway; but there are other places along the line of this road, where this material is found.

### ELATERITE.

Elaterite, which may be termed a mineral rubber, is found in very large deposits between Colton and Fort Duchesne; also on White river; on the Minnie Maud, on the Nine Mile Canyon, and other points, around and on the Uintah reservation.

It is a hard, black substance, showing a resplendent fracture, like gilsonite, when broken, but much less brittle, and when heated becomes elastic; when cold it resembles gutta percha, and may be termed a natural gutta percha, having the same qualities and suitable, after treatment, for the same use as gutta percha and natural rubber. It is found abundantly in Utah, and a market is being created for it, at a very remunerative price per ton.

## ASPHALTUM.

Asphaltum is found on the Uintah reservation and along the White river; at Whittemore Canyon, Thistle Junction, Nine Mile, and along Green and Grande rivers.

The quantity is so great as to insure support of the asphaltum industry, in Utah, for centuries to come.

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OFFICE OF GOMER THOMAS, STATE COAL MINE  
INSPECTOR OF THE STATE OF UTAH.

SALT LAKE CITY, UTAH,

January 29, 1900.

*Hon. Heber M. Wells, Governor of the State of Utah,  
Salt Lake City, Utah:*

Sir:—I hope that it will be possible to have this report printed, as there is such a great demand on this office for a statistical report on the coal mines of Utah.

I have in my office now, over two hundred applications for the report on the coal mines of Utah, from our Eastern States, Canada and Europe.

I also think it necessary that we should have our mining laws printed in pamphlet form, as there is a great demand for them from the mine superintendents, mine foremen and the miners.

My reasons for deeming it wise to have the mining laws within reach of the miners, is, that they might post themselves on the provisions of the law and govern themselves accordingly. I hope these can be printed, especially the former.

I am sorry that there has been such a delay in the completion of my report, but I could not obtain the amount of coal shipped into Utah, from the mines of Wyoming, as early as I had expected, receiving the last report on the 26th inst.

Very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

# REPORT FOR 1900.



**REPORT**  
**OF**  
**STATE COAL MINE INSPECTOR**  
**FOR 1900.**

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OFFICE OF GOMER THOMAS, STATE COAL MINE  
INSPECTOR OF THE STATE OF UTAH,  
SALT LAKE CITY, UTAH,  
December 27, 1900.

*Hon. Heber M. Wells, Governor of Utah,*

Sir:—In accordance with the Revised Statutes of Utah relative to mines and mining, I have the honor to submit to your Excellency the fifth annual report of this Department.

Very respectfully,

GOMER THOMAS,  
State Mine Inspector.

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Received in Executive Office Dec. 28, 1900.

Transmitted to the Secretary of State January 2, 1901.

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OFFICE OF STATE COAL MINE INSPECTOR,  
SALT LAKE CITY, UTAH.

*To His Excellency, Heber M. Wells, Governor of Utah,*

Sir:—In compliance with the statute relating to mines and mining, I have the honor to submit to you the fifth annual report of the Department of Mines and Mining, as provided for by the Revised Statutes of Utah.

The statistical report has been so arranged as to accord with the calendar year, and that part which is de-

voted to the inspection of mines extends from December 31, 1899, to December 31, 1900.

It contains tables and statistics showing the location of mines, total number of tons of coal mined, number of days worked, number of employees, number of accidents and number of kegs of powder used.

I regret very much to report to you so large an increase in the number of fatalities in and about the mines of Utah during 1900.

There were two hundred and nine (209) men killed in and about the mines during the year; two hundred of these were killed in the Scofield explosion on May 1st, and the other nine were accidentally killed in and around the different mines.

There have been sixty-three non-fatal accidents during the year, most of them being very slight, and many of them could have been avoided if due and proper care had been exercised on the part of the employees in and about the mines.

You will find in this report a detailed report of the Scofield explosion, stating cause and result, and also a map of the same.

I take the liberty to call your attention to my report on the Clear Creek mine; there you will see that I foresaw the danger of taking too much powder into the mine at one time, and as the Clear Creek mine is a heavy consumer of powder, I suggested to the management, in November, 1899, that they furnish the miners with cans that would hold  $6\frac{1}{2}$  pounds of powder, equal to  $\frac{1}{4}$  of a keg, as I thought that a keg was too much for each miner to take into the mine where there was so much of it used. The company furnished these cans, but the miners refused to use them; there being no law on this I could not enforce it, and the cans were not used until the middle of May after the Scofield disaster, when the miners realized that there was danger in taking too much powder into the mine. All the P. V. Coal Company's mines now use these cans.

Following the report on the Scofield explosion you will find the statements of some of the miners, examined by me after the explosion, as to the safety of the mine previous to the explosion.

I have also placed in this report a brief description

of the coal mines of the State, showing the production and improvements of same for 1900. The production of the mines of Utah for this year was 1,233,978 short tons, an increase of 348,304 short tons over 1899.

I have the honor to be,

Yours very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.



**PRODUCTION OF COAL, COKE AND ASPHALTUM; AND IM-  
PORTS, EXPORTS AND CONSUMPTION OF SAME  
IN UTAH FOR 1900.**

	Bituminous.	Anthracite.	Coke.	Asphaltum.
Production in Utah . .	1,233,978	. . . . .	35,013	2,550
Importation into Utah .	344,818	5,358	4,032	40
Total . . . . .	1,578,796	5,358	39,045	2,590
Exportation from Utah .	606,608	. . . . .	1,869	2,435
Consumed in Utah . . .	627,370	5,358	37,176	155

**TABLE SHOWING COAL PRODUCTION IN UTAH, FROM 1890  
TO 1900 INCLUSIVE.**

YEAR.	Number of Tons Produced.	Gain, Tons.	Loss, Tons.
1890 . . . . .	318,159	. . . . .	. . . . .
1891 . . . . .	371,045	52,886	. . . . .
1892 . . . . .	361,314	. . . . .	9,731
1893 . . . . .	418,049	56,735	. . . . .
1894 . . . . .	447,276	22,221	. . . . .
1895 . . . . .	172,958	. . . . .	274,328
1896 . . . . .	503,243	330,235	. . . . .
1897 . . . . .	582,092	78,849	. . . . .
1898 . . . . .	673,297	91,205	. . . . .
1899 . . . . .	878,122	204,826	. . . . .
1900 . . . . .	1,233,978	355,856	. . . . .

TABLE SHOWING THE COAL TONAGE FOR 1900 AS COMPARED WITH 1899.

Counties.	Short Tons.	Short Tons.	Short Tons.	Short Tons.
	1899.	1900.	Gain.	Loss.
Carbon . . . . .	776,666	1,085,374	308,708	. . . . .
Summit . . . . .	43,356	75,262	31,896	. . . . .
Emery . . . . .	. . . . .	5,500	5,500	. . . . .
San Pete . . . . .	4,875	3,500	. . . . .	1,375
Grand . . . . .	300	530	250	. . . . .
Iron . . . . .	1,125	250	. . . . .	875
Uintah . . . . .	6,450	6,500	50	. . . . .
Other small mines . . . . .	45,350	47,250	1,900	. . . . .
Total . . . . .	878,122	1,233,978	348,304	2,250
Net gain . . . . .	. . . . .	. . . . .	. . . . .	346,054

## MINES WHICH GENERATED LIGHT CARBURETTED HYDROGEN GAS (Fire Damp.)

CASTLE GATE, SUNNY SIDE—Carbon County.

GRASS CREEK—Summit.

**TABLE SHOWING NUMBER OF FATAL ACCIDENTS AND THE  
NUMBER OF NON-FATAL, AND THE COUNTY IN WHICH  
THE SAME OCCURRED, DURING THE YEAR 1900.**

COUNTIES.	Fatal.	Non-Fatal.	Total.
Carbon.....	208	63	271
San Pete.....	1	.....	1
Total.....	209	63	272

**TABLE SHOWING THE NUMBER OF MINES OPENED, SUS-  
PENDED AND ABANDONED DURING 1899.**

COUNTIES.	No. of Mines Opened.	No. of Mines Suspended.	No. of Mines Abandoned.
Carbon .....	12	none.	none.
Emery.....	15	none.	none.
Total.....	27	none.	none.

# PRODUCTION OF COAL IN UTAH DURING YEAR 1900.

## BY COUNTIES.

COUNTIES.	Number of Mines.	Total Product in Short Tons.	Made into Coke, Short Tons.	TOTAL VALUE.	Average Price, per Ton.	Average Number of Days Worked.	Average Number of Men Employed.
Carbon . . . . .	21	1,085,374	35,013	.. .. .	.. .. .	1730	1323
Summit . . . . .	5	75,252	.. .. .	\$112,878.00	\$1.50	628	89
Uintah . . . . .	38	6,500	.. .. .	11,335.00	1.75	100	60
San Pete . . . . .	6	3,500	.. .. .	5,250.00	1.50	200	8
Iron . . . . .	13	250	.. .. .	375.00	1.50	90	4
Grand . . . . .	6	530	.. .. .	795.00	1.50	164	8
Emery . . . . .	27	3,500	.. .. .	8,250.00	1.50	150	12

TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES OPERATED AND DAYS WORKED IN  
1899 AND 1900.

COUNTIES.	Number of Mines Worked, 1899.	Number of Mines Worked, 1900.	Gain.	Loss.	Average Number Days Worked in 1899.	Average Number Days Worked in 1900.	Gain.	Loss.
Carbon.....	19	21	2	.....	1205	1730	525	.....
Summit.....	8	5	.....	3	633	628	.....	5
Uintah.....	38	38	.....	.....	100	100	.....	.....
Emery.....	12	27	15	.....	250	150	.....	100
Iron.....	13	13	.....	.....	430	90	.....	340
Grand.....	6	6	.....	.....	60	164	104	.....
San Pete.....	6	6	.....	.....	250	200	.....	50

TABLE SHOWING NUMBER OF TONS OF COAL MINED, NUMBER OF TONS OF COKE PRODUCED, NUMBER OF DAYS WORKED, NUMBER OF EMPLOYEES, NUMBER OF PERSONS KILLED AND INJURED, NUMBER OF KEYS POWDER USED, ETC.

NAME OF MINE.	COUNTY.	Total Production in Tons of Coal.	Total of Coke in Short Tons.	No. Days Worked.	No. Men Employed.	No. of Fatal Accidents.	No. of Non-Fatal Accidents.	No. of Kegs Powder Used.	No. Pounds of Dynamite.	No. Mules and Horses.	No. Steam Boilers.	No. Coke Ovens.
Castle Gate . . . . .	Carbon . . . . .	257,909	35,013	262	438	3	10	4,730	32,147	16	7	204
Winter Quarters No. 1 . . . . .	" . . . . .	349,484	.	262	300	120	30	2,290	1,100	28	9	.
Winter Quarters No. 4 . . . . .	" . . . . .	136,835	.	265	106	84	12	4,945	1,600	13	.	.
Clear Creek . . . . .	" . . . . .	207,949	.	262	215	.	7	2,925	3,600	17	3	.
Sunnyside . . . . .	" . . . . .	132,222	.	309	260	1	4	16	34	8	4	.
Wasatch . . . . .	Summit . . . . .	42,612	.	250	41	.	.	225	.	10	4	.
Grass Creek . . . . .	" . . . . .	32,360	.	228	46	.	.	15	.	1	2	.
Deseret . . . . .	Emery . . . . .	2,500	.	160	6	2	6	20	1,000	2	.	.
New York . . . . .	" . . . . .	3,000	.	166	6	.	.	20	.	.	.	.
Thomas . . . . .	San Pete . . . . .	3,500	.	200	8	.	.	8	.	.	.	.
Aberdeen . . . . .	Carbon . . . . .	750	.	150	2	.	.	.	.	.	.	.
Ballard . . . . .	Grand . . . . .	350	.	120	2	.	.	.	.	.	.	.
Corry . . . . .	Iron . . . . .	250	.	90	4	.	.	.	.	.	.	.
Black Baby . . . . .	Grand . . . . .	180	.	44	6	.	.	.	.	.	.	.
Kimball . . . . .	Carbon . . . . .	225	.	100	2	.	.	.	.	.	.	.
Dexter . . . . .	Summit . . . . .	250	.	100	2	.	.	.	.	35	.	.
Utah County Mines . . . . .	Utah . . . . .	6,500	.	100	60	.	.	.	.	.	.	.
Other Small Mines . . . . .	.	47,250	.	.	.	.	.	.	.	.	.	.
Total . . . . .	.	1,233,978 Tons	.	.	.	.	.	.	.	.	.	.

**TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES  
IN 1900 COMPARED WITH 1899.**

COUNTIES.	1899.	1900.	Gain.	Loss.
Carbon .....	961	1,323	362	.....
Summit .....	76	89	13	.....
Uintah .....	60	60	.....	.....
Iron .....	9	4	.....	5
Grand .....	4	8	4	.....
Emery .....	10	12	2	.....
San Pete .....	8	8	.....	.....
<b>Total .....</b>	<b>1,136</b>	<b>1,504</b>	<b>361</b>	<b>5</b>

Showing a gain of 376 men in 1900.

**FEES COLLECTED FOR INSPECTION OF COAL MINES.**

NAME OF MINE.	Where Located.	Amount.
P. V. Coal Company's mines .....	Carbon County.....	\$190.00
Wasatch .....	Coalville .....	40.00
Grass Creek .....	Grass Creek .....	40.00
Aberdeen .....	Price .....	10.00
Deseret .....	Connellsville .....	10.00
Edmonds .....	Manti .....	10.00
Carbondale .....	Hales .....	10.00
<b>Total .....</b>	<b>.....</b>	<b>\$310.00</b>

**COAL PRODUCTION OF THE SEVERAL MINES IN THE  
STATE OF UTAH FOR 1900.**

NAME OF MINE.	OPERATED BY	Number of Tons
Castle Gate . . . . .	P. V. Coal Company . . . . .	259,909
Winter Quarters, No. 1 . . . . .	P. V. Coal Company . . . . .	349,484
Winter Quarters, No. 4 . . . . .	P. V. Coal Company . . . . .	136,835
Clear Creek . . . . .	P. V. Coal Company . . . . .	207,949
Sunnyside . . . . .	P. V. Coal Company . . . . .	132,222
Wasatch . . . . .	Weber Coal Company . . . . .	32,360
New York . . . . .	New York Coal Company . . . . .	3,500
Deseret . . . . .	Deseret Coal Company . . . . .	2,500
Thomas . . . . .	Sterling Coal Company . . . . .	3,000
Aberdeen . . . . .	Whittemore & Ballinger . . . . .	750
Ballard . . . . .	Ballard Bros . . . . .	350
Corry . . . . .	Corry & Co . . . . .	250
Black Baby . . . . .	Black Baby Coal Company . . . . .	180
Kimball . . . . .	O. G. Kimball . . . . .	225
Dexter Co . . . . .	Dexter & Sons . . . . .	250
Uintah County Mines . . . . .	. . . . .	6,500
Other small mines . . . . .	. . . . .	47,250
<b>Total . . . . .</b>	<b>. . . . .</b>	<b>1,233,978</b>



SHOWING THE NUMBER OF MINES EMPLOYING THE DIFFERENT METHODS OF VENTILATION AND  
THE THREE KINDS OF OPENINGS.

COUNTY.	Character of Opening.		Small— No Kind of Opening.	Total.	Mode of Ventilation.		Natural.
	Drift.	Slope.			Fan.	Steam Jets and Exhaust from Pump.	
Carbon . . . . .	19	2	. . . . .	21	9	. . . . .	14
Summit . . . . .	3	2	. . . . .	5	1	. . . . .	3
Utah . . . . .			38	38	. . . . .	. . . . .	38
Iron . . . . .	13		. . . . .	13	. . . . .	. . . . .	13
Grand . . . . .	6		. . . . .	6	. . . . .	. . . . .	6
Emery . . . . .	27		. . . . .	27	. . . . .	. . . . .	27
San Pete . . . . .	6		. . . . .	6	. . . . .	. . . . .	6

TABLE SHOWING COMPARISON OF THE CASUALTIES OF 1900 WITH THOSE OF 1899.

COUNTIES.	1899.				1900.				Total.	
	Fatal.	Serious.	Non-serious.	Total.	Fatal.	Serious.	Non-serious.	Total.	Gain.	Loss.
Carbon .....	.....	4	7	11	208	.....	63	271	256	.....
Summit.....	.....	.....	.....	.....	1	.....	.....	1	1	.....
San Pete.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Emery.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uintah.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN THE STATE AND THE NUMBER OF EACH THAT WERE IN OPERATION IN 1900.

BY COUNTIES.

COUNTIES.	Number of Mines which Employed more than 10 Men.	Number of Mines that Employed less than 10 Men.	Total by Counties.	Number of Large Mines in Operation During 1900.	Number of Small Mines in Operation During 1900.	Total Number of Mines in Operation in 1900.
Carbon.....	6	15	21	6	15	21
Summit.....	2	3	5	2	3	5
Iron .....	.....	13	13	.....	13	13
Utah.....	.....	38	38	.....	38	38
Sanpete.....	.....	6	6	.....	6	6
Emery.....	.....	27	27	.....	27	27
Grand .....	.....	9	9	.....	9	9
Total.....	.....	.....	.....	.....	.....	116

TABLE SHOWING LOCATION, ETC., OF COAL MINES IN UTAH.

NAME OF MINE.	NAME OF OPERATOR.	NAME OF SUPT.	POST OFFICE ADDRESS.
Winter Quarters No. 1.....	P. V. Coal Co.....	Thomas J. Parnley.....	Scofield.....
Winter Quarters No. 4.....	P. V. Coal Co.....	Thomas J. Parnley.....	Scofield.....
Castle Gate.....	P. V. Coal Co.....	Frank Cameron.....	Castle Gate.....
Clear Creek.....	P. V. Coal Co.....	H. B. Williams.....	Clear Creek.....
Sunny Side.....	P. V. Coal Co.....	Jos. A. Sharp.....	Sunny Side.....
Wasatch.....	W. J. Lewis.....	T. J. Lewis.....	Coalville.....
Grass Creek.....	Weber Coal Co.....	W. L. Hansen.....	Coalville.....
Deseret.....	Grass Creek Coal Co.....	H. Carlston.....	Fairview.....
New York.....	Deseret Coal Co.....	H. S. Kerr.....	Manti.....
Thomas.....	New York Coal Co.....	A. Ballinger.....	Price.....
Aberdeen.....	Sterling Coal Co.....	H. G. Ballard.....	Thompsons.....
Ballard.....	Whitmore Bros.....	A. Corry.....	Cedar City.....
Corry.....	Ballard Bros.....	J. T. Fanner.....	Green River.....
Black Baby.....	A. Corry.....	O. G. Kimball.....	Scofield.....
Kimball.....	Black Baby Coal Co.....	John Dexter.....	Coalville.....
Dexter.....	O. G. Kimball.....		
	Dexter & Sons.....		

## POWDER CONSUMED IN THE MINES OF THE STATE DURING 1900.

The results of the efforts made to ascertain the amount of powder consumed in the mines of the State during the past year will be found in the subjoined table.

The following will, however, give the amount of coal produced to the keg of powder consumed, as the results represent all of the mines in the State. There are fifty persons and companies operating mines in the State and have produced 1,233,978 short tons of coal; the footings indicate that 15,199 kegs, equaling 379,850 pounds of powder, were consumed in the mines of the State during the year; as a result it is found that there was an average of seventy-one (71) tons of coal mined by the explosion of each keg of powder used.

Intimately connected with the subject of ventilation is that of the explosion of powder in displacing the coal. The fumes thus liberated highly impregnate the air with carbonic oxide, or white damp, which is a most deadly gas. This, spreading through the mine, vitiates the air.

It is obvious that to dilute and render harmless the gas given off through the explosion of such large quantities of powder would require a most efficient system of ventilation. The natural and most available remedy for the baneful result to the miners from inhaling this poisonous gas would be to regulate the hours for shooting, so that the employees of the mine could withdraw to currents of fresh air while the blasting would be done. I have had complaints in regard to the excessive quantities of smoke created by the discharge of powder in the mines, and my belief is that the evil complained of is largely due to the employment of unskilled miners who use the powder in excessive quantities.

### THE CASTLE GATE MINE.

The Castle Gate mine is the property of the Pleasant Valley Coal Company, and is situated at Castle Gate Station, 108 miles south of Salt Lake City, in Carbon county, on the Rio Grande Western Railway.

This mine is the largest mine in the State, and has thirty miles of track in and out the mine. The average

number of men employed daily, inside and outside, was 438, and the mine was in operation 262 days during 1900.

The improvements made at Castle Gate mine during the year are: One electric hoist, 100 coke ovens, two electric Larry cars, and power and trolley line to coke ovens.

The production of this mine for 1900 was 257,909 short tons of coal and 35,013 tons of coke.

Artificial ventilation is furnished for this mine by a fifteen-foot Capell patent fan. This fan is running at the rate of 120 to 130 revolutions per minute, and producing 105,000 to 110,000 cubic feet per minute, with water gauge at "3," which is plenty to keep the mine in a clean and healthy condition. The fan can be speeded up to 250 revolutions per minute, making about 215,000 cubic feet of air per minute, with the water gauge at "6."

On my first official visit to this mine, January 5th, I found the mine working full time. I went through the mine and found the ventilation in good condition, and plenty of timber in each working place, and in general, the mine was in a good condition.

I made my second official visit to this mine on February 6th. The mine was working full time, with 225 men; ventilation was good, the mine was in good order, with everything running smoothly. I took the air measurements in the main and upper intakes on this visit, and found 96,600 cubic feet traveling in on the main intake and 32,000 cubic feet going in on the upper intake.

On my next visit to this mine, March 21st, everything was in good condition, plenty of ventilation passing through the mine.

On the 22nd everything in the mine was all right, but at 7:30 p. m., on this day, a terrific dust explosion occurred, which damaged the mine to a great extent. The greatest damage was done to the mine cars, over two hundred (200) of these were completely wrecked. All the stoppings in the mine were blown out; these stoppings are built in each cross-cut, of rock and lime, to conduct the air to the working places. All the doors, timbers and props on the main roads were blown down, and all the over-casts, which are built to conduct the air over one entry to the other, were blown down.

This explosion was nothing more than a dust explo-

sion, caused by the firing of heavy shots on the ninth rise entry.

All shots are fired in this mine by electricity by a man on the outside, after all the men are out of the mine. The current is turned on to fire all the shots at once, and for fear that there are some that have not gone off, it is turned on the second time. When the shots went off they caused a great dust, and it is supposed caused some of the wires to become crossed, and when the current was turned on the second time it caused a big flash and ignited the dust and caused the explosion.

When the explosion occurred I was at Castle Gate, and not more than 500 feet from the mouth of the mine. Immediately after the explosion, Assistant Superintendent H. G. Williams, Mine Superintendent Frank Cameron and myself went into the mine to ascertain whether there was any fire in the mine or not. With a temporary brattice, we reached the head of the main eighteen hours after, and were satisfied that there was no fire, and we returned to the mouth of the tunnel and started to build permanent stoppings and over-casts, taking the fresh air with us. During this time there was a large accumulation of gas on the tenth, eleventh, twelfth and thirteenth rises, and all work done during this time was done with safety lamps.

The part of the mine where the explosion occurred was ventilated by an inlet on the top of the eighth rise, some three hundred (300) feet higher than the main intake.

There was about 33,000 cubic feet of dry air per minute coming in at this intake; having no way to moisten this air, it left all the places on the ninth and tenth rises dry.

As soon as we got to work we closed this upper intake by placing doors on the same, but still maintaining the same as an escapement way. The air is now brought through the main intake, which is about 112,500 cubic feet per minute.

W. G. Sharp, the mine superintendent, and myself held a meeting to discuss the proposition of moistening the mine; Mr. Sharp suggested that the "10"-fan engine exhaust be placed in the main intake for ten hours every day. This was done, and proved to be a success in mois-

tening the dust and atmosphere. With this exhaust, the steam jets and the sprinkling system it is an easy matter to keep the mine constantly damp.

On my fourth visit of inspection, April 12th-13th, I issued the following notice:

"This is to certify that I have on this 12th and 13th days of April, 1900, made an official visit to and inspected the Castle Gate mine, and found said mine in a safe condition, and the ventilation good. The mine has been well-watered, all through, and is perfectly damp. I approve of the change in ventilation which has been made, and would say that the mine is safe to start to work.

(Signed)

"GOMER THOMAS,  
"State Coal Mine Inspector."

The mine had been idle up to this day since the explosion.

On June 10th I made my fifth official visit of inspection to this mine. I inspected all the main traveling roads, and found them in good condition and well-watered and the mine working full time.

On my sixth official visit of inspection to this mine, July 25th, I found the mine in a very fair condition, but by looking over the register I found that they had encountered a few feeders of carburetted hydrogen gas during the month, otherwise the mine was in good condition. Every place in the mine was well-watered, and sufficient timber near all working places.

I made my seventh official visit of inspection to this mine on August 12th. On this visit I inspected all the main roads and part of the working places, and found them in a good condition.

On my eighth official visit, October 5th, I made an inspection of all the mines, and found everything working satisfactorily, with good ventilation, all places watered and kept damp.

On October 29th I made another visit of inspection to this mine, and found everything in a first-class condition.

I made my tenth visit of inspection to this mine on November 20th. On this visit I went through the mine, and found all places timbered and in a safe condition.

All places were ventilated and kept well-watered.



The following are the "shooting regulations" for this mine which went into effect April 12, 1900:

1. The mining must extend at least six inches beyond the end of the holes in all cases, and twelve inches at all places beyond and towards the tight side of holes.

2. All holes must be  $2\frac{1}{2}$  feet deep: No shorter holes will be fired.

3. All coal dust must be extracted from the holes before they are fired.

4. No hole must be charged with more than five sticks of powder.

5. No material whatever, except the wet wood pulp furnished by the company, must be used in tamping shots.

6. No shots shall be fired unless all places within thirty yards are in a wet condition so that dust cannot be raised by a windy shot.

7. Standing holes or parts of standing holes must not be recharged.

8. The hole in a tight corner must be at least one foot from rib at back end of hole.

9. In solid faces holes must be more than five feet apart horizontally, and not less than two such holes will be fired.

10. In coal over six feet high, no hole must be more than five feet in height above the floor at back of hole in shooting bottom bench.

11. In high coal bottom bench must be shot down before shots are fired in top bench.

12. The object of the above rules is to prevent and remove the danger from blown-out or windy shots, and it shall be the duty of all firemen, in addition to the above rules, to refuse to shoot any holes which in their judgment may be dangerous, whether the circumstances are fully covered by the rules or not. The firemen are expected to always be on the safe side.

(Signed.)

F. N. CAMERON,  
Mine Supt.

Approved:

H. G. WILLIAMS,  
Gen'l Supt.

## WINTER QUARTERS MINE NO. 1.

This mine is the property of the Pleasant Valley Coal Company, and is situated about sixteen miles from Colton on a branch of the Rio Grande Western Railway. This mine is the oldest mine in the State and the largest producer, producing in 1900, 349,484 short tons, using 4,730 kegs of powder. This year's output fell below that of last on account of the delay after the explosion, which stopped the mine for nearly two months.

The mine is artificially ventilated with a Guibal exhaust fan, running at the rate of 84 revolutions per minute, producing 67,300 cubic feet of air per minute, which is distributed to all the working places in the mine.

The improvements made at this mine during 1900 are: one 19 by 18 McEwan Simple Automatic Engine, one 14 by 16 by 12 Knowles Pump, one Electric Pump, machine shop, car shop and water line in the mine.

This mine suffered great loss of life and damage to property from the explosion which occurred in No. 4 mine on May 1st, by being connected with the same. This mine was never known to give off any gases. One hundred and seventeen men died in this mine from the effects of the explosion in No. 4 Mine.

On my first official visit of inspection to this mine, February 9th and March 10th, I found the mine working full time with 323 men; everything was in good condition, with good ventilation, all places timbered and in a safe condition.

I made my second visit of inspection to this mine on May 1st, the day the explosion occurred in No. 4 mine.

When I reached Scofield fifty of the dead had already been taken out of the mines. I immediately entered the mine with Mr. Sharp, general manager, and took charge of a rescuing party, while Mr. Sharp, who had been in the mine for several hours, went out for a few hours' rest.

I took charge of this party near the head of the eighth rise, known as the face of the Farrish level, in No. 1 mine, and from here out to the mouth of No. 1 I found but very little damage done.

About two-thirds of the number of men who died in No. 1 were found near the head of the seventh rise; they here encountered the deadly after damp which swept down this rise immediately after the explosion from No. 4

mine, to which they succumbed. This being the nearest way out through No. 4 mine, and not knowing where the explosion had occurred, they ran right into the after-damp. There is no doubt in my mind that had these men gone down the eighth rise they would have all saved their lives, for had they gone down the eighth rise they would have encountered fresh air.

Most of these men were warned of the explosion but they stopped to put their tools away and lock their boxes, and some went so far as to finish load their cars and put up props. If they had run right out they could have come right out in fresh air most all the way, but they did not seem to think there was much danger for they did not hurry as they knew the mine did not give off any explosive gas and was not known to be a dusty mine. From this point we travelled through the Farrish level, fixing up brattice and taking out bodies as we went. We continued this work up until May 12th, when we got what was supposed to be the last bodies, but in going over the list we discovered that the body of John Pitman could not be found. On the 31st of July I went to Scofield to meet Mr. Williams by his request to determine whether we could safely search for the body or not.

We proceeded to his room, 12 Farrish level, at the head of which was a large cave, and I suggested that a force of men be put to work in three shifts to undermine the cave to see if the body could be found, and on the 9th day of August they found his body, which brought the number of killed up to two hundred (200).

I stayed in Scofield during the month of May and on the 25th I issued an order certifying that the mine was in a safe condition to start to work, as follows:

"This is to certify that I have made an official visit of inspection of No. 4 mine, Winter Quarters, on this 25th day and night of May, and find all the mine has been sprinkled and made wet. I also find the ventilation in a fair condition. All places have been timbered up and made safe, and in my judgment the mine is safe and ready to start to work at any time.

(Signed.)

"GOMER THOMAS,  
"State Coal Mine Inspector."

On my third visit of inspection to this mine, June 9th, I found that the sprinkling system was working nicely, the mine was working full time and everything in general was in good condition.

About this time we were having a little trouble with the new force of men which had been employed, in regards to timbering and working the coal.

My next visit was on June 27th; I found everything about the same as on my last visit.

My fifth official visit of inspection was on July 31st. On this visit I found the mine in good condition; everything was kept damp and no dust in the mine. On this visit I started a force of men to search for the body of John Pitman, which they found on the 9th of August.

On September 26th I made my next visit of inspection to this mine. I found everything in a very fair condition excepting too much smoke in the levels off the eighth rise. The new miners are becoming acquainted with the work and things are progressing nicely.

On my seventh official visit of inspection, October 5th, I found quite a number of the doors and stoppings leaking, which would prevent a sufficient amount of air from going to the working places, and the miners were compelled to work in considerable smoke.

I reported this to the Superintendent and asked him to see to it and keep it clear, which he promised to do.

My next official visit was on the 16th of October. On this date I found the mine a little worse than on my previous visit in regard to ventilation. I again told the Superintendent about the bad condition of the mine and urged him to see to it at once and also to place lights in the manway so the men might see to travel into and out of the mine.

I waited until the first of November and found that this had not been complied with, and on this date I wrote them a letter stating that this must be done immediately. On the fifth day of the same month I made a visit to the Castle Gate mine and the General Superintendent informed me that this had all been complied with. I am pleased to say that Winter Quarters Mine No. 1 is again in a good condition.

#### WINTER QUARTERS MINE NO. 4.

This mine is the property of the Pleasant Valley Coal Company, and is situated about one-quarter mile north of No. 1 mine. This is the mine wherein occurred the disastrous explosion of May 1st.

This is a new mine being opened during the year 1899. The main and main-back entries are in a little over 2,000 feet, with two cross entries and twenty-eight rooms, but not all working.

On March 8th I visited this mine and went all through the mine with the mine foreman, and found it in a good condition, with good ventilation and well-timbered, parts of it dry, but not dusty; it had some dust, as all mines have more or less of it.

My next official visit was on May 1st, the day of the disaster. On this visit I stayed at the mine some thirty days.

I found on examination that the explosion occurred at the head of "Pike's Peak." It was caused by an accidental explosion of black powder, or a windy or blown-out shot: as there were evidences of both, it is hard to determine which, and as this was the first of the month, the amount of powder taken in was very large; we know there were thirty kegs exploded during the explosion. This alone making a tremendous explosion, the effect of this, and the heat which would ignite the dust and distill therefrom combustible gases, would add to the deadly effect of the explosion.

The after-damp from such an explosion is more deadly than the after-damp of a gas explosion or of a dust explosion without the powder.

This mine was never known to give off any explosive gases, either before or after the explosion.

Eighty-three men were killed outright by the explosion in this mine, only two escaping. Following this article will be found a detailed report on the explosion, stating cause, result, etc., and also statements of miners who were working and have worked for years in these mines, in regard to the condition of the mine on the morning of the explosion.

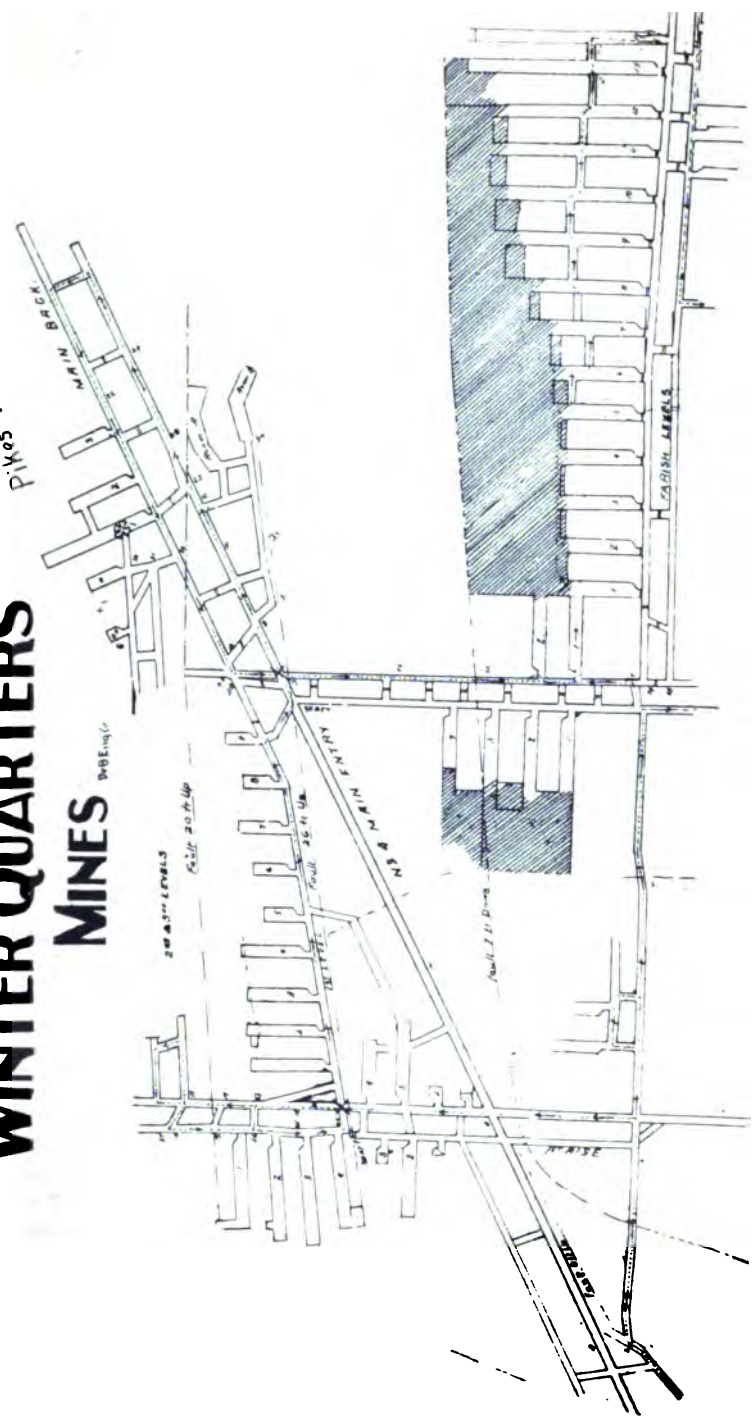
This mine produced during 1900, 136,835 short tons of coal, and used 2,290 kegs of powder. The improve-

# WINTER QUARTERS

Pike's Peak

## MINES

DeBeers Co.





ments during the year are: One Capell inlet fan, water-pipe line in mine, and barn.

I made seven other visits to this mine during the year and found the mine was always kept in good condition and constantly damp.

## REPORT OF EXPLOSION AT WINTER QUARTERS MINES, MAY 1, 1900.

At about 10:25 on the morning of May 1, 1900, an explosion occurred, originating in Number 4 mine, by which two hundred (200) men lost their lives, and seven (7) were injured.

Two men came out of No. 4 mine uninjured, and one hundred and three (103) came out of No. 1 mine uninjured. Most of the men in No. 4 mine were killed by force and heat of the explosion; all men in the first rise were suffocated by the after-damp which swept down from No. 4 mine after the explosion.

Number 1 mine and No. 4 mine are connected, and by reason of such connection both mines suffered a loss by the one explosion:

It seems, from the evidence available, that some person accidentally ignited a keg of powder, which caused the dust to rise and ignited the same, carrying the flames from room to room from a point known as "Pike's Peak" and immediate vicinity thereof. I find that ten (10) kegs of powder were exploded near this point. Twenty (20) kegs of powder exploded in other parts of the mine, making a total of thirty (30) kegs of black powder exploded, thus adding to the force of the explosion.

Along the line where the powder exploded all the bodies were badly burned, more so than in any other part of the mine. From this point the blast shot down along the main and main-back entries, and through all the rooms and entries of No. 4 mine, gathering all the combustibles, such as dust, powder, etc., within reach. Part of the blast shot out to the surface through No. 4 tunnel and air-shaft, and part went through No. 1 mine. The part of the blast that went into No. 1 mine soon lost its force, the heat only reaching as far down as room No. 11, fourth rise, and room 7 on the sixth rise, but did not reach the eighth rise, as the dust in No. 1 mine was damp.



There were sixty men smothered by the after-damp; these men were found on the top of seventh rise, and were not burned, and were only a short distance from fresh air.

All the men working below the fourth level of the eighth rise entries escaped, and scarcely felt the shock. Only two men working above this point came out alive; these were rescued three and one-half hours after the explosion occurred. All the other men on this level, hearing the explosion ran, trying to make their escape, and encountered the after-damp, to which they succumbed. I am of the opinion that had they remained in their working places, or if they had gone down the eighth rise entry, many of them would have been saved.

The mine foreman having been killed, and all those who were acquainted with the location of the places in No. 4 mine, where the men were working on this day, having been killed, made it difficult to rescue the men, as many places had caved in and buried them up, and also made it difficult to gain information as to the causes of the explosion.

At no time has there been known to exist, in any of the Winter Quarters mines, any explosive gases, before or since the explosion.

The method of mining, at the time of the explosion, being the same as has been in existence for the past twenty years in the Winter Quarters mines Nos. 1, 2, 3, and 4. These mines are all on the same vein.

We find in the report for 1899, that during the year there were 4,400 kegs of black powder used in mining coal in Winter Quarters mines.

It has always been the practice for the miners to take their powder into the mine by the keg; not alone in these mines has this been the practice, but in nearly all the mines in the different States, and are doing the same to-day, regardless of the dust, or other surrounding dangers.

This explosion was either due to carelessness in handling of explosives or to a windy or blow-out shot, thus igniting the dust, in air free from fire-damp, which we see can be attained when it is found that shots in such places, where the rarest classes of shots are fired in a mine or with an explosion of powder, such as we find in this case, but as we know that fire-damp is unknown in this mine; here we have the proof that an explosion can

take place without the presence of fire-damp under these conditions.

This was a new mine which was opened during the year 1899, and the rooms were all new; the main entry was only 1600 feet from the surface, with four cross entries and twenty-six (26) rooms

So it can be readily seen that there was no room for a large amount of dust, and we find it a strong explosion to occur in such a small mine and free from fire-damp. I am of the opinion that the part played by coal dust in mine explosions is much more disastrous than the part played by fire-damp, under the conditions in favor of the belief that coal dust is often the main agent of destruction in mine explosions, and of the view that explosions might originate from and be propagated by coal dust under certain conditions in air free from fire-damp.

Under these conditions it is safe for me to say that no mine is safe without a sufficient amount of moisture to keep the dust damp. Now if the dust is an agent in explosions it is most dangerous when it is dry.

It is my opinion that the dust in the Winter Quarters mine is not of a very explosive nature, as we find that there has been hundreds of blown-out shots in the mine with no serious results heretofore.

In one case John D. Jones accidentally exploded three-quarters of a keg of powder and the dust did not ignite. This was in mine No. 3, which mine develops as much dust as the one that exploded, and is connected to the same, being in continuation of the same seam of coal, but in this latter case the heat from the explosion was so intense that it ignited the dust and distilled the gases which increased the force of the explosion.

For the safety of miners, in the future, I have recommended that no more than six and one-quarter pounds of powder be allowed to be taken into the mine by any one man in one day.

I have also suggested to the companies that they put a watering system in all the mines, so that every place can be sprinkled; thus the dust will be kept damp and the temperature reduced.

The Pleasant Valley Coal Company has complied with my suggestion.

The following are the statements of some of the

miners of Winter Quarters mines, in regard to the explosion, taken by me after said explosion:

Statement of John R. Davis:

Q. How long have you been working in Scotfield? A. Twenty years next June, but I have not been here every summer; been down home some summers; I have been here most of my time.

Q. Where were you at the time of the explosion? A. I was down home. I was working nights.

Q. When did you work previous to the explosion? A. The night before.

Q. What was the condition of the mine that night, Mr. Davis? A. It was in a good condition as far as I knew; around our place it was in a good condition.

Q. Where were you working? A. In the main entry in No. 1.

Q. Had you been around this mine lately, around other parts other than the main? A. Yes, sir, a great many places; you see, sometimes I am on the rock; sometimes on other jobs; I am called out of my entry lots of times.

Q. Was it very dusty, any dust at all? A. Where I am working it is rather damp; there was no dust.

Q. Did you ever hear any one complaining about too much dust or about the dust being dangerous? A. No, sir, I never heard nothing of the kind.

Q. Did you ever hear of any gas here in the mine? A. No, sir, I never. I would put my life down that there was no gas in the mine. I have worked in every part of this mine and never saw any gas.

Q. What was your opinion when you quit work the night before; did you have any idea the mine was dangerous? A. No, sir, I never dreamed of anything of the kind.

(Signed.)

JOHN R. DAVIS.

#### STATEMENT OF WILLIAM R. DAVIS.

Q. Where were you on the day of the explosion? A. I was in the mine until about ten o'clock.

Q. How long was that before the explosion? A. Well, I had just reached the store when she went off, and I walked pretty fast.

Q. Was it an hour? A. No, it couldn't have been.

Q. About half an hour, then? A. Yes, just about.

Q. In what condition did you find the place where you were working? A. Well, it was in a pretty fair condition.

Q. Where were you working? A. I was working driving the first rise up, where they had the surveyors, you know.

Q. That is where the hoist is? A. Above the hoist.

Q. What was the condition around there? A. It was looking nice and clean; there didn't seem to be much filth or dust around there.

Q. What condition was it for dust did you say? A. Well, there wasn't much of anything at all. There was a little dust up there by the drum. If any one had told me at the mouth of the tunnel when I came out that she was going to explode, I would have told them they were d— liars.

Q. Had you been in any of the mine previous to this?

A. No, I had been through where they are driving the rock tunnel.

I mean had you been around previous to this, around the mine, before this explosion? A. No.

Q. Did you ever hear anyone complain about it being dusty or dangerous. A. No, I never heard anyone. I heard several say about the Finnish level that she was pretty dusty.

(Signed)

WM. R. DAVIS.

#### STATEMENT OF WM. RAMSEY.

Q. Where were you at the time of the explosion?

A. I was right down stairs here; just came out.

Q. Had you been to work that morning. A. Yes, we left there at ten o'clock.

Q. What mine? A. No. 4.

Q. What part of No. 4 did you come from. A. The head of first rise.

Q. What was the condition of the mine when you left there in your opinion; now, how did it look? A. Well, where we were working it was all right. There was no dust—scarcely enough to fill in between the ties.

Q. Were you working in room or entry? A. Entry.

Q. How long have you been working here Mr. Ramsey? A. In Winter Quarters mines?

Q. Yes. A. Off and on eleven years.

Q. What was your opinion of the mine yourself in regard to its safety that morning? A. I thought there wasn't a safer mine in America, for my part of it, than No. 4 was.

Q. Did you hear any one else complain or hear any rumors in regard to the unsafety of the mine? A. No, sir.

Q. Never heard at all of any gas in that mine, did you? A. No, sir.

Q. Nor seen any? A. No, I think it is too close to the surface.

Q. Did you ever know of any fire-damp or black-damp? A. No, sir.

Q. Never knew of any damp of any kind? A. No, sir.

Q. Then you think the mine was perfectly safe, in your own judgment? A. Yes, sir.

(Signed)

WILLIAM RAMSEY.

#### STATEMENT OF WILLIAM C. WILSON.

Q. What is your occupation? A. Coal miner.

Q. How long have you been a miner? A. Well, I went into the mines when I was about six months under six, and now I am very near 57. I consider I have been working in the mines fifty years.

Q. Have you ever worked in mines giving off gases or fire-damp, as we call it? A. Yes, sir, in England.

Q. How long have you worked in Winter Quarters? A. Three years, about the 28th of this next June since I started.

Q. Which mine did you work in? A. I have worked in all three. I worked in No. 1 and then went into No. 2; they stopped No. 2, and I came to work in No. 4.

Q. Where were you working on the morning of the explosion? A. On the back-main in No. 1.

Q. Did you feel the shock of this explosion where you were working? A. Yes, sis.

Q. In what shape? A. I considered it an explosion, and I said to my partner that if this was a gassy mine, I would consider it a gas explosion, but as there was no gas in that mine, I thought perhaps it was a big cave of

rock in some wide place . I put my lamp in the middle of the track—you know a concussion of the air that came together—it came and went, and I put my lamp in the middle of the track to see if the air was traveling all right, and I said, "I don't know what to think about this; the air is going in the right direction, and everything seems to be all right." By this, we heard the car coming, and I said, "There can't be anything serious the matter; the horse is coming in." He said, "No, I don't think there is." The boy comes in with the car, and I says to him, "What's the matter?" and he said, "I don't know." He said, "I was nearly blown off the end of the car," and I said, "Did you hear anyone say there was a cave anywhere, or did you hear anyone running anywhere?" He said, "No," and then I said, "It is strange." I says, "I don' know what to do." I says, "It is a mystery to me, now, I can't tell anything about it." My partner says, "Well, it seems to be all right." He pulled the car in and begins to throw coal in, and some one comes along and says, "There has been an explosion, and you had better get out," and we got out. We never saw any after-damp all the way out. There was a kind of smell, you know, but there wasn't anything that you would call after-damp.

Q. Did you ever hear any one say, or did you ever see any gas in this mine, any explosive gas? A. No, sir.

Q. Did you ever hear of any being in No. 4? A. No, sir.

Q. What was your opinion that morning when you went into the mine—did you have any idea that the mine was unsafe? A. Well, I thought it was one of the safest mines I had ever worked in in my lifetime, so far as gas is concerned.

Q. Did you go back into the mines to do some exploring, or aid in finding the bodies? A. Yes, I came out just after the explosion, and I went home and got a drink of tea and then went back into the mine and worked until something after 9 o'clock.

Q. Where were you working? A. Up eighth rise up as far as fifth level.

Q. Were you up around the over-cast where those men were found? A. They were found just before I got there. Mr. Sharp asked me to go out for a bucket of

water, and I think during the time I was out for the water these men were found.

Q. What would be your opinion now—supposing you were in the same fix now—what would your idea be in regard to coming down eighth rise in place of going to the over-cast? Would you think one would have a better chance to get out? A. Yes, I think so. My experience has been in the mines to meet the fresh air always travel on the income; travel out on the income in a time like this.

Q. Is there any gas in the mine? A. No, sir.

Q. You don't think it generated any? A. I don't think so.

Q. In your opinion, didn't you think some men were careless in handling powder? A. Yes, sir.

Q. Don't you think a keg of powder might be exploded as a result of that carelessness? A. Well, I don't know but I have seen men careless; seen them pouring powder right out of the keg with their lamps on their caps.

Q. Don't you think that was a dangerous proposition? A. Yes, I did.

Q. Now, from your long experience you never had any idea that dust would explode? A. Never before.

Q. And now, supposing a keg should explode in a dusty place, what do you think would be the result? A. I think it would light up the dust.

Q. And probably cause an explosion of the mine if it could travel far enough and keep getting dust? A. Yes, sir.

Q. Have you ever worked in any other mine in the West besides this one? A. Yes, sir, the Wasatch mine at Coalville.

Q. Have you worked in where they blast the coal off the solid, as in Diamondville? A. Not in the West, I haven't; only here.

(Signed)

WILLIAM C. WILSON.

#### STATEMENT OF WALTER CLARK.

Q. What is your occupation? A. A miner.

Q. How long have you been a miner? A. I have been working in the mines for forty-three years coming

next August since I first started. I started when I was 17 years of age.

Q. Have you ever worked in a mine giving out gas?  
A. Yes, sir.

Q. Where? A. In England.

Q. How long have you worked in Winter Quarters?  
A. Four years.

Q. Which mine did you work in? A. No. 1 all the time.

Q. What part of No. 1? A. Well, I worked in the first rise, fourth, sixth and eighth rises.

Q. Where were you on the morning of the explosion?  
A. I was home.

Q. Did you ever see any gas in these mines? A. No, sir, I never.

Q. Did you ever hear any one say they saw any?  
A. No, sir.

Q. Isn't it a fact that some of the miners say that if there hadn't been some gas here it would not have blown up? A. I have heard some say so since the explosion; I never heard anything prior to that; that rumor was around Coalville when I was up there.

Q. Have you heard it in town here? A. No, sir.

Q. What was the condition of the mine in regards to its safety? A. It was all right so far as my knowledge went. I had no knowledge of any danger of this kind that occurred.

Q. Did you consider it dangerous in any way? A. No, sir, that is, only if you neglected putting up some timber there was danger in that.

Q. Did you ever see any accumulation of dust in the mine? A. Yes, sir, I have seen dust.

Q. Did you consider it dangerous? A. No, I didn't know it was dangerous at the time; I never saw a dust explosion.

Q. What part of the mine have you seen this dust?  
A. I saw it in No. 4 mine coming out. The fifth rise where I was working was quite damp. I was working on the sixth rise when it occurred. There wasn't any dust there; there was water springing up all along. I have seen dust in No. 4 when I was traveling out.

Q. Have you worked in other mines in this part of



the State? A. I have worked in the Wasatch mine at Coalville.

Q. What is the comparison in regard to that mine as to the safety of the miners? A. Pretty favorable as to that.

Q. You lost some of your sons? A. Yes, three of them.

Q. You didn't think there was any danger from any source, did you? A. No, sir.

Q. Considered it as safe as any mine you had ever worked in? A. Yes.

Q. Would you be afraid to go into it now and work? A. No, I expect I will have to.

Q. You would not be afraid to go in—suppose you could get a job in a mine in the vicinity, which mine would you prefer to work in? A. I think I would sooner go to work in here if they do what they say they are going to do, saturate the mine.

Q. The air was generally good? A. Yes, sir; I have worked where it wasn't so good and I have worked where it was pretty fair.

Q. Have you worked in any other mines in the West besides here and Coalville? A. I worked in Rock Springs, Wyo.

Q. How would this mine compare with Rock Springs, that is, in a general way, relating to ventilation and coal dust? A. There wasn't much coal dust at Rock Springs; it was a new mine and they hadn't opened it up very extensively when I was there. I didn't see much. There was splendid ventilation there. I believe of the two it was ahead of this at that time.

Q. Did they work the coal the same as they do here? A. They used to undermine it, entry work.

Q. But in a general way you consider this mine, the Winter Quarters mine, as safe as most mines you have worked in? A. Yes, sir.

Q. Did you shoot the coal off the solid in Coalville? A. No, sir, we undermined it.

Q. It would be very dangerous to undermine the coal at the Winter Quarters mine? A. Yes, I think it would.

Q. When you were in Coalville did you hear this story about the gas being in the mine that exploded? Did

any of the men you heard talk that way ever work here?

A. No, sir, I don't think so; not those that were talking to me.

(Signed.)

WALTER CLARK.

#### STATEMENT OF WILLIAM COULTHARD.

Q. What is your occupation? A. Well, I have been going around the mine canvassing, brattice man.

Q. How long have you been at that job? A. I have been at it about six years. This is the only mine I have ever worked in in this country.

Q. Then you have worked in mines where there is gas? A. Yes, sir, I was about seventeen years before coming here; had charge of the underground work in the old country.

Q. Have you ever heard of any gas in this mine? A. No, sir.

Q. Have you been all over it? A. Yes, sir, in every corner of it.

Q. Did you ever hear any one say there was gas in it? A. No, sir, I never did, and I traveled it over much every day.

Q. What was the condition of the mine in general as to its safety? A. The mine was in good condition, in fact, I thought it was just as safe as it could be; I never thought anything could occur. The ventilation was very good—that is sometimes it lacked in some parts of the mine, perhaps a stopping gave way, or something of that kind.

Q. Did you consider the mine dangerous in any way? A. I did not in the least.

Q. In what condition did you find it in regard to dust? A. Well, there was some; the fact is, there wasn't enough water to lay the dust and there was some dust. There was more or less dust on the tracks.

Q. There is more or less dust in all coal mines? A. Yes, sir.

Q. Was there greater quantities here than in mines you have worked in in England? A. About the same, of an ordinary nature. I haven't seen any special accumulation of dust that I know of.

Q. Was, the ventilation in this mine, in your opinion,

as good as the average mines you have worked in? A. Yes, I do.

Q. As a bratticeman you were brought often in advance of the air current to put up this brattice? A. Yes, sir.

Q. Would that be a likely place to find gas if it was in the mine? A. Yes, I think it would; couldn't have found a better place.

Q. Have you ever been up in high places? A. Yes, I have.

Q. That is, on top of a fall of rock? A. Yes.

Q. Never saw any indications of explosive gas? A. I am satisfied from what I have seen that there was none.

Q. Now I suppose you understand coal mining in all its phases? A. Yes.

Q. Now, in your opinion, honestly, did you think this mine has generated any fire-damp? A. I don't think so; I think it would have been seen or discovered somewhere.

Q. Now, in your history of coal-mining, and what you know about it, where would be the most likely place to find it if it was generated? A. I am satisfied that it would lead to the highest place.

Q. That is where you would expect to find the most of it? A. It sometimes comes from the bottom and in blows.

Q. Isn't it a fact that it comes from the breaks in the strata? A. Yes.

Q. And where you cut a fault, isn't there a break there? A. Yes, sir.

Q. You never saw any gas there? A. No, sir.

Q. You have been through most of these faults? A. I have.

Q. Have you seen any explosive gas? A. Such a thing as gas I have never seen.

Q. What was the condition of No. 4 when you were there? A. It was all right.

Q. As regards ventilation and dust? A. It was all right then; it wasn't open entry.

Q. You had some relatives lost in the disaster? A. I lost my only son.

Q. Have you ever worked in mines in your forty-five years' experience where they had lines of pipes and putting water under pressure to wash the side and roof and

the workings? A. No, not generally, but there was in a mine I was working in, there was just a portion of it, and it didn't continue any length of time; it didn't become general.

Q. Then the system is not a general one; it is rather an extraordinary method taken to dampen the dust? A. Well, as far as my experience is concerned, it is.

Q. You don't think the dust was in any greater quantities in No. 4 than it used to be in old No. 2? A. Well, as I told you before, I haven't been in the workings for over a year.

Q. You never thought there was any danger from this dust? A. No, sir.

Q. And it is from the experience, the sad experience in which you lost your only son, that you feel that this is a step in the right direction? A. Yes, sir.

Q. How long since you worked in this mine? A. I was working on the day of the explosion.

Q. Where were you at the time of the explosion? A. I had just come down the sixth rise and was making my way to the third rise when I heard it go off.

Q. Now, in traveling around the mine extensively as you have done, have you ever seen men handling powder and caps carelessly? A. Yes.

Q. In what way? A. I have seen men making up shots with their lights in their caps; I have seen them, but have never approved of it.

Q. You think, as a rule, many of the miners are killed that way? A. Yes, sir.

Q. Do you think this thing occurred through the careless handling of powder? A. I am afraid so.

Examined by Mr. McNeil, ex-Mine Inspector of Colorado:

Q. Judging from the experience we have had from this sad disaster, what is your opinion, if one or two kegs of powder should explode where the surroundings were dusty? A. My opinion is different now from what it was before; I never thought there was any danger in dust previous to this. Of course, it would have a great tendency to raise the dust, and it would get fire no doubt, and it would be hard to tell what the result would be. The Finlanders were very careless; they would fire from three to four shots one after another. I have seen, after

they have fired a large shot, a blaze shoot across the face, I should think for several yards back, be blazing clear across the face. I never felt comfortable when it was that way, and I have often told them, but you might as well talk to nothing as those fellows.

Q. That blaze you saw, what in your opinion was it; what did it consist of? A. I think it was the powder, such a large quantity of powder.

Q. Some of the unused powder that was in the blast? A. Yes, I think so; I couldn't account for it in any other way; it wasn't gas.

(Signed)

WILLIAM COULTHARD.

Testimony of the following parties taken at St. Mark's hospital:--

#### STATEMENT OF THOMAS LIVSEY.

Q. What was your occupation? A. Coal miner.

Q. How long have you been a coal miner? A. Thirty-five years.

Q. How long have you mined in Winter Quarters?

A. About three years.

Q. Have you worked in fire mines before? A. I have been in two explosions.

Q. Did you ever see any indications of gas in Winter Quarters mines? A. No.

Q. You would know gas when you saw it, would you not? A. Yes, sir.

Q. What was the condition of Winter Quarters mine on the morning of the explosion--that is, where you were working, in regard to being safe? A. I was working in a place as safe as this room. I think it was as safe as this room; the roof was very solid.

Q. What was the condition of the dust that morning? A. It was wet in the sixth rise; cannot give any account of except where I was working.

Q. You say you worked there about four years? A. It will be four years next October.

Q. Have you been mining coal all that time? A. I have been in that place about two and one-half years.

Q. What other mine did you work in? A. Winter Quarters No. 2.

Q. Was No. 2 a dusty mine. A. It was dustier than No. 1.

Q. In using powder how much did you take into the mine at once? A. One keg.

Q. Have you ever seen men filling cartridges with their lamps on their heads? A. I have not.

Q. In regard to the mine officials, you are well acquainted with them, are you not? A. I am.

Q. Do you think they are fully competent to manage the mine? A. I believe they were.

Q. You think they were on the alert to danger—that is, discharged their duties three days prior to the explosion and took as much precaution for the safety of the miners as they did six months ago? A. Yes, sir.

Q. Have you ever heard of any one finding fire-damp in the mine? A. No, I have not.

Q. You know what fire damp is? A. Yes.

Q. Have you heard of any one who knew there was fire-damp in the mine? A. No, I have not.

Q. How many mines have you worked in in America? A. I have worked in Coalville and Winter Quarters.

Q. Did you lose your presence of mind after the explosion? A. No.

Q. Did you see any flames during the time of the blast? A. No.

Q. Have you ever been in No. 4 mine? A. We came through No. 4 every night.

Q. What was the condition of the dust in No. 4. A. There was no dust to amount to anything where I traveled.

#### STATEMENT OF ALEX WILSON.

Q. What is your occupation? A. Coal miner.

Q. How long have you been a coal miner? A. For thirty years.

Q. How long have you worked in Winter Quarters? A. About six years.

Q. Have you ever worked in a mine giving off gas? A. Yes, sir, man.

Q. Did you ever see any gas in Winter Quarters? A. No, there was no gas.

Q. Did you hear any one else say there was? A. No, I did not.

Q. What was the condition of the mine? A. Good—the air was good.

Q. Were you in the mine that morning? A. Yes, I was.

Q. What is your opinion in regards to the condition of the mine? A. I know it was all right.

Q. How many mines have you worked in in this country? A. Nos. 3, 4 and 5, Almy, Wyo., Grass Creek and 1, 2, 3 and 4, Winter Quarters.

Q. How did Winter Quarters the morning of the explosion compare with the other mines you have worked in? A. Safer than any mine I have ever worked in; that is my opinion.

Q. Did you ever see any gas in Winter Quarters mine? A. No, there was no gas in it.

Q. How much powder did you have in the mine at one time at Winter Quarters? A. One keg; when one keg was about empty I took in another.

Q. Do you know whether any orders have been given not to fill your cartridges with your lamp in your caps? A. I do not know.

Q. Are you well acquainted with the superintendent and foreman of the mine? A. Yes, sir.

Q. Do you think they are fully competent to look after the mine? A. Yes, I do; I am sure of it.

Q. There has been no change in the method of working the mine since you have been there? A. No, sir.

Q. Do you think the sprinkling of the mine will add to the safety of the miners? A. It might.

#### ACCIDENT REPORT OF EXPLOSION IN NO. 4 MINE, MAY 1, 1900.

Examination of Number 4 Mine by State Mine Inspector Gomer Thomas, Assistant Superintendent H. G. Williams, Mine Superintendent Thomas J. Parmley, Robert Forester and George W. Snow.

#### ON NEW MAIN ENTRY.

At twenty-one in from survey plug No. 9, here a giant powder box, said to contain fifteen caps and fifty-six sticks

of giant powder, had not exploded. At plug No. 9 a mine car which was loaded was bottom side up. Alfred Bekkala says this car formerly stood near and a little bit below (out) from where the above named powder was. This car, therefore, would not have been thrown more than twenty feet. A coat belonging to Isaac Macki, not burned, was found about six feet below (out) from where the above-mentioned powder box was said to have been.

Note.—(From position of giant powder box as above given to rock face where Isaac Macki was working distance was not taken. Later it is measured and is 213 feet, and between these points there is a big cave from the roof of the tunnel.)

At a point sixty feet in from the rock face a piece of canvas brattice is jammed upon the end of a projecting rail from the inside, showing that here the blast was outward towards the mouth.

Alfred Bekkala says that Macki had fired no shot the morning of the explosion, as the rock face was the same as he had left it the day before; but Macki had drilled one hole and his drill was standing in another hole. The face is about five feet six inches high from the bottom, and is situated one hundred and two feet out from the outside rib of the crosscut, and station 29, which is the last crosscut shown on the map up to March 31, 1900.

The following is to be added to the preceding, viz.:

May 10th. Note as to remarks of Tom Eynon:

Tom Eynon says himself that the powder referred to was not moved up to the entry seventy-five feet, but that Alfred Bekkala and Isaac Macki kept their powder in the same place where he had kept it while working on the rock face—i. e., in the place herein above described, and that the statement made by Alfred Bekkala that the powder was not moved up is correct, up to the night of the day before the explosion.

Also on May 11th:—The statement is added that (in the main entry at a point below where the powder is kept) an empty car, laid off on one side on account of broken axle, was blown outward down the entry 120 yards.

At the cross-cut at station 29, distance 102 feet in from the rock face previously mentioned; on the right rib of the entry at this cross-cut is an exploded black powder



keg. About ten feet in this cross-cut is a dinner bucket, on the left hand side (going through from the main) which was in the explosion, found upside down and torn to pieces. Also parts of a coal-drill scattered around, and other evidence of a miner's box having been there. Farther inside this cross-cut, and on the right hand side, a second dinner bucket is found. Also at intersection of left rib of main with lower or outside rib of this cross-cut, and in the main entry leaning up against the rib is a drill, two hammers and a handle of a coal-drilling machine, all leaning against the rib apparently undisturbed. Note.—(My recollection is that these tools were in the main entry about two feet below the rib of the cross-cut. G. W. S.)

#### FACE OF MAIN ENTRY NO. 4.

Here and there is a hole about three feet six inches deep; a man's cap was found close to the face, and a pick leaning up against the face within a foot of the hole above referred to, is apparently undisturbed.

In the last cross-cut next to the face of the main (which is 142 feet in from outside rib of the preceding cross-cut referred to at station 29, and which is also 50 feet back from the face). In this last cross-cut are found the remnants of a powder can and a battered mine cat stands square across (and about in the middle of) it.'

On the side of the car next to the main back entry (and away from the main entry) designated as side A, some light pieces of wood were jammed against and above the wheels and a plank from the side A was found over on the opposite of the car on main entry side designated as B, lying near the car between B and the main entry, while some car irons were found against the rib of the main back entry on the other side opposite to the cross-cut.

#### MAIN BACK ENTRY NO. 4.

On the lower rib of room No. 3, on main back entry, a battered powder can was found. Very strong fire in this room clear down to floor. Blaze has extended to within twenty feet from face. Room is in fully eighty feet, and burned or coked coal is driven into some of the props.

Note.—(This is a “dead-end” room—that is, there is no cross-cut from it to room No. 2.)

### ROOM 2 OFF MAIN BACK.

In this room about seventy-five feet there is a cross-cut to room No. 1. There is an exploded powder box near cross-cut, and soot in this room. Could not reach face account caved.

In cross-cut to main between rooms 2 and 3, near station 28, on the end of cross-cut nearest to main back, remnants of an exploded powder box were found. Mr. Parmley says the force came through this cross-cut from the main entry side. We found three exploded powder cans in main back, just below this cross-cut.

### ROOM 1 OFF MAIN BACK ENTRY.

Badly caved at face and in cross-cut between this and room O, powder and powder boxes for rooms O and I, exploded and destroyed, i. e., two powder kegs exploded in the cross-cut between rooms O and I, and very heavy deposits of soot are found there.

Room O: This is the room at the end of the cross entry from main back (survey stations 20, 21 and 30) to the inner ends of the levels now opened out and to be driven beneath the second and third levels of the first rise entry above the fault. In room O coal in loaded car twenty feet back from face was burned by flames, which went also to the face of the room. The body of George Langsta was found in this room badly burned.

Room OO: This is the only room opening off the inner end of the third level of first rise (see explanation as to this third level under heading “Room O.” At the mouth of room OO there is an empty car, and powder box of men working here could not be found here. The powder box for this room is about forty feet from this room in a cross-cut towards room No. O, where exploded powder and destroyed box is found. There are large deposits of soot in this room and a drill was found in a hole where a man was probably drilling at the time of the explosion. H. G. Williams says at least three powder cans exploded in the cross-cut between rooms O and OO and OO and 1, with strong blasts towards dead ends of rooms and entries.

In the entry leading to rooms O and OO and to the inner ends of the second and third levels, the coal was caved. The force of the explosion seems to have gone in on the third level and back on the second level, and a car on each of these levels is smashed up by the explosion.

The force of the explosion on these levels was very strong and but little signs of fire.

On the third level fifty feet out from the cross-cut a coat was found. In the main back entry at the mouth of the cross entry, leading to above second and third levels, there is a wheel for letting down cars; the blast was outward from the cross entry toward the wheel; a piece of brattice cloth against the wheel post appears to have come from up the main back entry, while the side of the post next to the above described cross entry appears to have received blast from that direction (i. e.—direction of the cross entry.) The blast coming down (outward from main back appears to have been the stronger of the two.

#### MAIN BACK ENTRY AND 4TH RISE.

At junction between main back entry and fourth rise very little heat and very little soot shown (and there was no soot shown outward on first level and first rise from this point). At drum at head of fourth rise it shows a little fire on the left side, with some force. Some decided effects of force were shown on two cars near head of fourth rise and near drum. Of these, the lower or empty car was standing in cross-cut between main and back at stations 8 to 18, and was thrown over near the rib.

#### ROOM NINE OFF MAIN BACK.

(Counting from rooms on first level.)

This room shows comparatively (with what follows) little fire. Room not more than forty-five feet in; props lying down on floor at mouth show comparatively little fire. Ribs at mouth of room show less fire than at mouth of room 8 (to follow), while from this room in, over ground already described, there is greater force than here, but no fire, while the force there has been very strong.

**Room 8**—At the mouth of this room coal appears almost to have been blazing, while some timbers lying on rib of entry opposite to the mouth of this room are thrown down but not burned. On a prop about thirty-five feet in this room, lying on the floor, coked coal sticks to and has been driven into the wood, while on the prop still standing this is absent, but the standing props are burned.

**Note.**—Near room 8 there is an angle in the main back, and from here out this entry is called first level of first rise or first level.

**Room 7—First level:** Shows fire in about fifty feet and face of room is in about seventy-five feet. A prop on the inside rib shows burns on side towards the room, but not on the side toward the entry. Prop on the outside of mouth of this room shows burn all around, while props in the entry opposite mouth of this room do not show any signs of burning, and the caps of the timbers in this entry, between this room and room 8, do not show any signs of fire at all.

**Room 6, First Level**—This room is in about seventy-five feet and shows fire in about fifty feet; shows great heat and charred wood at mouth. At mouth a pick stands upright near corner of inside rib, held so by a piece of coal on the steel. Between this and the next room, a pile of timbers, a dozen or more, are thrown down in the entry. None of these timbers are charred by fire.

**Room 5, First Level**—At mouth of this room it appears to have been hotter than at any of the following ones, that is, the heat appears to have been stronger here. Fire in this room was up to the face, which is estimated at from fifty to sixty feet in. At mouth of this room the coal appears almost to have been coked. Opposite this room there is an incline down to first and second rises. The force here went downward through this incline. Later it would appear that the force through this incline was forced through a cross-cut from second to first rise and exhibited its effects more deadly in room 2 (as numbered upward from the new main entry).

**Room 4, First Level**—Splinter on ties at mouth of this room not burned, while ten feet in the room there are badly burned chips and charred sticks lying on the floor. There are signs of heat along the rib of entry at the

mouth of the room, while props on the floor of the entry, between this and room 5, show no signs of burning.

Room 3, First Level—No props standing in this room. In the mouth there are signs of great heat clear down to the floor. In general, in passing in on the first level backward over ground already described, the heat appears to have been stronger and lower down.

Room 2, First Level—T. J. Parmley says there was no one at work here at the time of the explosion; also, that the props were taken out of this room for use elsewhere. The fall in this room is an old one made from taking out props.

Room 1, First Level—At a tool box found about twenty-five feet in this room, the box, clothing, paper and props are all scorched and burned, while a keg of powder was scorched on top, but did not explode, although it sits alongside a tool box on top of which is burned and scorched paper. The fire limit in this room is about sixty-five feet, while face of the room is about 120 feet in.

Room 4, off First Rise Above Fault—Fire extended in 95 feet to 100 feet, no signs of force. A full keg (nearly) of powder 110 feet in this room did not explode.

Room 23, off First Rise, Above Fault—Fire extended in about seventy-five feet; room is in about 175 feet; no signs of force. A keg containing unexploded powder found at the end of the fire limit, as above explained. An undisturbed empty car stands on the track about twenty feet from the face.

Room 2, First Rise, Above Fault—Jacob Anderson was working here alone on the day of the explosion and came out alive.

Two-thirds of a keg of powder set in a slight offset in the right-hand pillar about 100 feet from the center of first rise entry. The fire limit is shown by the ashes on the props, and is about seventy-five feet from the entry. This room is in about 160 feet, and a loaded car stands at the face. All the props are intact.

Room 1, First Rise, Above Fault—Props have been on fire while the powder in the tool box about six feet away from fired props did not explode. Fire extended into this room about seventy-five feet, where evidences of fire ceases.

Cross-cut near Room 1, on First Rise—(Survey Station 13 to 26).

In this cross-cut the canvas door was on fire, and it appears to have been slightly heated. At the first rise end a car was thrown from the track, and there is evidences of strong heat. Against the inside end of this car some brattice material is piled, thrown from above.

Top of First Rise—Apparently no fire and no blast.

In third level off first rise a keg of powder is found intact, in a sack; also seventeen and one-half sticks of giant powder and some caps at the beginning of this third level off first rise are found intact. There are evidences of less heat at the beginning of the first level off first rise than in the four rooms last above named. This last statement is, however, open to question, as the roof here is glazed in places by heat.

On first level off first rise, there is an entry running about ninety feet to the face; at the face of this entry there is a hole where a shot appears to have blown out on the wrong side, breaking through into the second rise. Where the break-through occurred the rib is about three feet thick. At the mouth of this entry it is about fifty-five or sixty feet to the nearest rib of the first rise.

Room 1, first rise below fault, is just opened out.

Room 2, First Rise Below Fault—Opposite this room is a cross-cut; through this the blast from the incline down the first level passed and entering this room charred the props.

Room 3, First Rise Below Fault—In this room the props are not charred.

Second Rise—At the drum at the head of this rise there are no signs of fire.

Rooms A and B, off New Main, Between the Faults—No signs of flames in this entry leading to these rooms.

In Room A—The first appearance of fire is on the right rib near mouth of room, and on a loaded car standing in the neck of the room. A man was found about thirty-five feet in this room near car. All timbers been on fire in this room up to ninety feet from its mouth, and three-quarters of a keg of powder standing near scorched box about forty feet in this room did not explode, although the flames extended in beyond the powder. This

room is in about 140 feet, and the fire "tails out" on the left-hand side going out.

In Room B—This room is on the direct line of the entry coming from No. 4 main. Fire begins in this room about thirty feet in. The air in this room evidently acted as a cushion to receive the force.

Third and Fourth Rise and Farrish Level—At top of fourth rise near No. 4 main, the sides and top appear polished, but no fire. Here and for some distance below shows extreme heat, but no burning. About seventy yards above room 2 a lantern frame belonging at the drum at the top of this entry was found, and another piece of the same was found about twenty-five feet lower down. Twenty feet below room No. 1 an empty car, which could not get away on account of being attached to the rope, was badly wrecked and almost in splinters. About twenty-five feet below this car was another, a loaded car, badly demolished, with sides split out. This car had served as protection for another loaded car coupled to it on the lower side, and the latter was in fairly good condition. These two loaded cars were just below the lowest cross-cut to third rise, and were about thirty-five feet above the Farrish level. The fourth rise below the Farrish level is badly caved, and the men taken out of here were badly burned, but had no fire on their clothing.

On the third rise the blast came through the cross-cut from the fourth rise. The upper end of third rise was filled with debris, probably before the explosion.

Rooms 1 and 2, third rise, show no signs of fire. Heat chippings have fallen from the roof since the deposit of soot.

Room 3, on Third Rise—There has been no fire here, but there has been heat enough to stew a little sap from the props.

Room 4, third rise, shows considerable force and some heat, but no fire.

Room 2, fourth rise, shows strong heat at mouth. Fire on props and strong force about thirty feet in. About half the props are knocked down. Standing props show burning and slight heat effects are shown on the coal. The fire ceases about thirty feet in.

Room 1, Fourth Rise—In the mouth of this room is

a damaged empty car, which seems to have been set aside temporarily for repairs. The side of this car appears to have been smashed by the explosion. No flame effects are shown on the props, upon some of which there is a coarse dust deposit, indicating the current into and out of this room, which is connected through to room 1, off the Farrish level. The Farrish level back from the fourth rise is caved. Here the blast went outward toward first rise; the props on the left-hand side were broken by the force pushing outward; a switch stand was also bent outward, and a loaded car standing at the bottom of third rise was blown over and upset against the outside rib. There are evidences of extreme heat, but no fire.

On Farrish level, between fourth rise and first room, three empty cars stand on the right hand side (going in), the first car is most damaged, the second car next and the third is the least damaged. The blast going in here appears to have been met by another from the fourth rise coming around through room 1, fourth rise, through room 1 of this level. This is evidenced by two loaded cars in the Farrish level, just inside the three cars above referred to, as well as another car in the cross-cut of this level, which seems to indicate a current opposite to that entering direct from the fourth rise.

Room 1, Farrish Level—A fall occurred here where this room intersects room 1 on the fourth rise. The cave looks as if the slabs were hanging and blast got up under them, bringing the rock down. In this room, post and floor seems changed. There appears to have been a hot blast through here, but little fire, probably none; charring done by some probable distillation of gas, but no flames. Props scorched on the upper side. A prop in Farrish level, about 12 feet out from room 1, shows coke dust on inside and sooty dust on outside. A coat on the entry, opposite the mouth of this room, was not burned.

Farrish Level, Rooms 1 and 2—Here cloth and wood was found on the floor not burned.

Room 2, Farrish Level—No fire shown on the few standing props. This room was finished and caves occurred before the explosion.

Room 3, Farrish Level: Heat shown in the mouth of this room, particles of dust and frayed canvas blown



against the props; no fire; signs of great heat on the rib of the cross-cut to room 4, but no signs of burning.

Room 4, Farrish Level: Signs of heat on the rib but no fire; that is combustion.

Farrish Level Between Rooms 4 and 5—The deposits on props appear to be coarser, a kind of sooty, dusty deposit.

Room 5, Farrish Level—Stringers of soot are on the timbers in this room, and resin is stewed out of the props. Signs of heat on the ribs covered with soot; slight signs of burning near the end of the room.

Room 6, Farrish Level—On the prop against the rib, on the entry at the mouth of this room, there is evidence of two blasts. Greater evidences of heat at the mouth of this room than in room 5. Here was a powder box containing a keg of powder, which exploded. The box appears to have been locked. There are signs of great heat on the rib near the face of this room, but no fire or burning. Two men were taken out of here.

Note.—(This is the place where a pillar was cut through to find two men.)

Room 7, Farrish Level—Force entered this room from the fourth rise, across the end of the pillars of the previous rooms. This room is badly caved.

Room 8, Farrish Level—Opposite cross-cut to fifth rise from No. 1 mine; slight evidences of heat at the mouth of the room. No signs of powder in rooms 7 and 8.

Note.—(On all these rooms where the explosion came around the pillar more heat is shown at the face than at the mouth.)

Room 9, Farrish Level—Shows heat on the ribs; been very hot but no fire or burning. No powder found in this room.

Room 10, Farrish Level—This room was undoubtedly hot, but so much soot, can not tell much about heat. Keg of powder exploded on right rib.

Room 11, Farrish Level—Pieces of powder box and scattered tools found, and a keg of powder exploded. Can near face smashed to pieces. Soot very plentiful on the ribs. This room was open on the pillar around to room 10. Considerable heat chippings have fallen out but there are no signs of burning.

Room 12, Farrish Level—Powder exploded here, no

signs of heat; a very decided blast gone up above the cross-cuts, and car knocked about by explosion, but the car was in good condition.

Room 13, Farrish Level—Keg of powder exploded; excessive soot on the props. This is a dead-end room above the cross-cut and the props have been on fire. Coal coked on the upper part of the room. Everything shows signs of intense heat. Fifty feet back from the face no sign of fire. Between cross-cut and face a maximum fire effect shows, and where the destroyed powder box was found the maximum heat effects show. In this room there is coked coal on the props above the cross-cut.

Room 14, Farrish Level: No signs of fire on the props at cross-cut at room 13. Above cross-cut and near room face the props were burned and the coked coal was driven into the props from the face of room. This room appears to be up about one hundred and fifty feet from the cross-cut, and there is very little soot but intense heat in the face of the room. Burning commences twenty feet above the cross-cut and ends fifty feet from the top of the room. From the cross-cut to the entry in this room it is about one hundred and fifty feet. This room is different as to soot from any room we have seen. A keg of unexploded powder was found about forty feet from the top of the room.

We also find the disposition of things in the top workings of No. 1 mine about the same as above.

OFFICE OF THE PLEASANT VALLEY  
COAL COMPANY,  
SCOFIELD, UTAH,  
May 25, 1900.

*Gomer Thomas, Esq., State Inspector of Coal Mines,  
Salt Lake City, Utah:*

Dear Sir:—In addition to the various verbal reports heretofore made to you, I submit the following written report of the explosion in Winter Quarters Nos. 1 and 4 mines at Scofield, Utah:

At about 10:25 on the morning of May 1, 1900, an explosion occurred, apparently originating in No. 4 mine, by which, according to the latest count, after the most careful checking, one hundred ninety-nine men lost their lives and seven were wounded.

The following is a list of the names as nearly as can be ascertained of those who lost their lives. All of these bodies have been recovered and identified as closely as possible under the circumstances. The last of these was recovered on May 12th.

Joseph Anderson,  
Victor Aho,  
Andrew Adamson,  
Ralph Burns,  
Andrew Bintala,  
Matt Bintala,  
Guy Brennan,  
Henry Bernard,  
John Q. Davis,  
David John Davis,  
Eric Erichson,  
Jos. N. Graves,  
Matt Hundus,  
Nicholas Hutula,  
Elias Hutula,  
Andrew Hauta,  
John Heikkila,  
Alex Heikkila,  
Chas. Honkala,  
John Honkala,  
John T. Jones,  
John Johnson,  
Matt Jacobson,  
John Koski,  
Mike Kangas,  
John Korpi,  
Chas. Koski,  
Leander Klemola,  
Antti Klemola,  
Westeri Klemola,  
Matt Koski,  
Alex Kangas,  
Henry J. Louma,  
Alex Ketola,  
Jacob Keraner,  
John Krook,  
John Korbela,  
Frank Kolson,

Herman Kivicht,  
Leander Louma,  
Gust Louma,  
Wm. A. Louma,  
Henry Louma,  
Alex Louma,  
Abe Louma,  
Oscar Lindback,  
John Lahey,  
Chas. Lobbe,  
Christian Lakso,  
John Lundgreen,  
A. A. Louma,  
Isaac Macki,  
J. C. Martin,  
Andrew Macki,  
Maknus Niemi,  
Oscar Niemi,  
Victor Ojan,  
Leander Ojan,  
Richard Pack,  
John Pesola,  
R. D. Reese,  
Thos. Ramage,  
Thos. Riley,  
Wm. Silo,  
Wm. Samuels,  
Jacob Silien,  
Danial Skersies,  
John Thomas,  
Wm. Tomlinson,  
Eric Uppa,  
Alfred Warila,  
Herman Erickson,  
Nicholas Walkama,  
Geo. W. Coulthard,  
M. Voen Duer,  
Wm. Davis,

Roger B. Davis,  
 Daniel Davis,  
 Wm. P. Davis,  
 Richard T. Davis,  
 David T. Evans,  
 John N. Powel Davis,  
 Leon Gordin,  
 Gus Gordin,  
 Edw. M. Hardee,  
 Thos. J. Hardee,  
 Levi Jones,  
 Wm. G. Jones,  
 Edw. Jones,  
 Mathias Pattinson,  
 Meshick Pitman,  
 Wm. Pugh,  
 Wm. C. Reese,  
 F. D. Thomas,  
 Evan D. Thomas,  
 Jos. S. Thomas,  
 Jos. P. Thomas,  
 Louis Leyshon,  
 Morgan Miller,  
 John Miller,  
 John O. Davis,  
 Wm. Parmley,  
 Jas. W. Gatherum,  
 D. D. Davis,  
 Robt. Langstaff,  
 S. J. Padfield,  
 Willie Wilson,  
 Sandy Wilson,  
 Nicolo Anselmo,  
 G. Finari,  
 John Hunter,  
 Henry Wilson,  
 James Wallace, Sr.,  
 George Wilson,  
 Ed. Street,  
 John M. Burns,  
 Peter CoClet,  
 J. Delklef,  
 Robt. Ferrish,

Wm. Good,  
 James Good,  
 J. X. Lloyd,  
 John R. Price,  
 Thos. H. Reilley,  
 John Webber,  
 Llewellyn Williams,  
 Robert Williams,  
 Peter Southerland,  
 Thos. Brogden,  
 Harry Betterson,  
 James Ferrens,  
 Robt. Ferrens,  
 James Jenkins,  
 Martin Cassidy,  
 Wm. Jacobson,  
 Thos. Webber,  
 Wm. Webber,  
 Ben Lloyd,  
 Jos. Lacasse,  
 H. A. Miller,  
 Isaac A. Miller,  
 Richard P. Thomas,  
 Thos. Farrish,  
 Robt. T. Farrish,  
 A. J. Franklin,  
 Robt. D. Wilstead,  
 Wm. Wilstead,  
 W. B. Dougal,  
 John Muir,  
 Daniel Muir,  
 George Muir,  
 Gunner Bearnson,  
 David Wilcox,  
 A. E. Watson,  
 V. R. Miller,  
 Wm. A. Nelson,  
 Clyde Law,  
 Deniel Williams,  
 Daniel Pitman,  
 John D. Pitman,  
 Evan E. Evans,  
 W. K. Douglass,

Wm. Miller,  
 John T. Davis,  
 Geo. O. Davis,  
 Thos. Gatherum,  
 Wm. W. Gatherum,  
 Geo. Langstaff,  
 John Kitton,  
 David Padfield,  
 James Wilson,  
 Christ Johnson,  
 Ginseppi Maio,  
 Antonio Rollo,  
 David Hunter,  
 Wm. Hunter Paterson,  
 John S. Hunter,  
 James A. Hunter,  
 Frank F. Strang, Jr.,

Chas. Edwards,  
 Richard Dixon,  
 Wm. Clark, Jr.,  
 John James,  
 George Clark,  
 S. W. Clark,  
 Jas. C. Hunter,  
 Adam Hunter,  
 Robt. Hunter,  
 Frank Strang, Sr.,  
 Richard Stewart,  
 David Illingsworth,  
 Wm. Ulerthorn,  
 Geo. Jos. James,  
 Wm. H. Clark,  
 Thos. Padfield,

Similarity of names and the fact that many of the Finnish miners go under two names, leaves the question still in doubt as to whether the body of John Pitman has been taken out and not properly identified but buried under one of the names in the above list. This uncertainty is still being investigated.

The names of those injured are:

Alexander Wilson,  
 William Livsey,  
 Harry Taylor,  
 Thos. Sellers,

John Wilson,  
 William Boyter, Jr.,  
 Thos. Livsey.

all of whom are rapidly recovering.

The cause and origin of the explosion are not yet definitely known. Investigation is still pending. The fact that the mine foreman and most of the men that were in No. 4 mine at the time of the explosion were killed, makes it difficult to get exact evidence. No explosive gas is known to have been seen in any of the Winter Quarters mines either before or since the explosion. The methods of mining at the time of the explosion were the same as have been in practice for the past twenty years in Winter Quarters No. 1, 2, 3 and 4 mines, which are all of the same vein of coal. Investigation thus far leads to the supposition that the explosion probably originated from an accidental discharge of black powder and was aug-

mented by coal dust. The explosion seems to have spread from the upper part of No. 4 mine entirely through that mine and through into the rise entries of No. 1 mine, the after-damp extending some distance beyond the force of the explosion. Many of the deaths in No. 1 resulted from this after-damp. From the lower levels in No. 1 mine about one hundred and three workmen escaped uninjured.

Yours truly,  
(Signed.) H. G. WILLIAMS,  
Asst. Supt. P. V. Coal Co.

The Grand Jury of Carbon county attached the blame of the explosion to no one. The jury had been three days investigating the cause of the explosion, and on the evening of June 13th made their report, in which they say there is no blame attached to the Pleasant Valley Coal Company.

Ten employees were witnesses before the jury, among whom was Walter Clark, who had two sons killed in the explosion. His testimony was strong against attaching blame, as was that of the others, all of whom came from Winter Quarters and Scofield.

The Coroner's inquest held on the bodies of the men killed in the explosion held that no one was to blame.

The following are the names of the Justice and jurors who sat in the case: William Hurst, Justice; William Potter, Frank Mayweather and A. Green, Jurors.

Accompanying this report will be found a sketch of the Scofield mine No. 4, where the explosion of May 1st occurred, showing location of seat of explosion and the direction in which the blast shot.

C. B. SPRAGUE, Chemist,  
360 Center St.

Salt Lake City, Utah, August 1st, 1900.

Gomer Thomas, State Mine Inspector, City—

Dear Sir: Enclosed are copies of my analysis of the materials taken from Winter Quarters mine No. 4, after the explosion of May 1st.

These materials invariably consist of mixtures of coal and coke; and it was found to be impracticable to

separate these kinds of materials wholly from each other.

Regarding the coal produced, owing to the shortness of the duration of heat, only the very finest particles were completely coked, the interior of the larger grains being practically unaltered.

The ash in most of the samples is high. If all the coal were reduced to coke, the ash in the latter should not exceed 12 or 14 per cent. Where the ash much exceeds this limit, it is clear that there is an admixture of mineral matter. Such mineral matter must either be ash, resulting from combustion of the fixed carbon of some of the coal, or earthy impurity, derived from foreign source. If this last proportion of mineral matter were the former it would show the actual combustion of a large amount of coal dust.

Examination on this point, both chemical and microscopical, shows that the mineral matter is wholly, or nearly so, of foreign source, and is largely derived from material composing the soot, etc.

The soot, which is deposited in such quantities in the region of Pike's Peak, was derived from an incomplete combustion of hydro-carbon gases, given off from the coal.

These facts all point to a distillation of the coal and explosion of the volatile matters given off; since in the coke we have a residue of coal deprived of its volatile matter, and in the soot a product of this volatile matter incompletely burned.

If the coal dust had itself exploded, we should expect to find a large amount of ash mixed with the materials affected; as pointed out there was found a large admixture of mineral matter, but this is not ash, or only in a small degree. All this makes it appear that the explosion was of the gases given off from the coal, and not the actual explosion of the dust as such.

The fact that the dust did not explode under the influence of a heat sufficient to drive off its volatile matter, shows that the dust is not sensitive to the explosive influence. It is evident that any material capable of giving off hydro-carbon gases will so do if sufficiently heated; and it is clear that such gases will form an explosive mixture of air.

The burning of the distilled gases appears to have

provided heat for the further distillation; and large grains of coke driven in the timbers shows that incandescent particles were carried and might have thus communicated fire.

The primary cause of the explosion is accounted for by the explosion or combustion of a large quantity of powder. Both the latter, and the imperfect combustion of the hydro-carbon gases gave rise to the poisonous carbon, monoxide gas. Quantities of resinous matter were found in most of the samples analysed. This material was found to be a product of distillation of coal, and bears out the conclusions already given.

(Signed)

C. B. SPRAGUE,  
Chemist.

Analysis of dust from main entry and first rise, No. 4 mine, Winter Quarters

Water .....	3.70 per cent.
Volatile matter .....	28.72 per cent.
Fixed carbon.....	47.34 per cent.
Ash .....	20.24 per cent.
	<hr/>
	100.00 per cent.

This material is a mixture of partially-coked coal and foreign matter.

Analysis of material on post, inside fourth rise, No. 4 mine:

Water .....	1.69 per cent.
Volatile matter.....	17.77 per cent.
Fixed carbon.....	47.76 per cent.
Ash .....	32.78 per cent.
	<hr/>
	100.00 per cent.

Material is largely soot, enclosing particles of coal, coke and mineral matter.



Analysis of dust under hole of blown-through shot on first rise, No. 4 mine:

Water .....	2.70 per cent.
Volatile matter.....	34.65 per cent.
Fixed carbon.....	46.83 per cent.
Ash .....	15.82 per cent.

---

100.00 per cent.

Material is coal containing partially-coked coal and some foreign mineral matter.

Analysis of coal from beneath surface by blown-through shot on first rise, No. 4 mine:

Water .....	3.33 per cent.
Volatile matter.....	42.67 per cent.
Fixed carbon.....	49.06 per cent.
Ash .....	4.94 per cent.

---

100.00 per cent.

This sample was taken at distance of four inches under surface, and coal is unaffected by the explosion.

Analysis of dust from fourth cross-cut, face of main entry, No. 4 mine:

Water .....	1.80 per cent.
Volatile matter.....	25.58 per cent.
Fixed carbon.....	51.46 per cent.
Ash .....	21.16 per cent.

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100.00 per cent.

Analysis of material driven into crevices in coal, last cross-cut on Main entry No. 4 mine:

Water .....	.78 per cent.
Volatile matter.....	21.42 per cent.
Fixed carbon.....	34.20 per cent.
Ash .....	43.60 per cent.

---

100.00 per cent.

Analysis of soot from face of main, inside rock entry,  
No. 4 mine:

Water .....	1.74 per cent.
Volatile matter.....	18.72 per cent.
Fixed carbon.....	45.30 per cent.
Ash .....	34.24 per cent.

---

100.00 per cent.

The materials consist of soot mixed with partially-coked coal and foreign mineral matters.

Analysis of coke on timber, top room, main back,  
No. 4 mine:

Water .....	1.54 per cent.
Volatile matter.....	24.80 per cent.
Fixed carbon.....	59.36 per cent.
Ash .....	14.30 per cent.

---

100.00 per cent.

This material consists of partially-coked coal.

(Signed)

C. B. SPRAGUE,  
Chemist.

June 13th, 1900.

Gomer Thomas, State Mine Inspector, City—

Dear Sir: Regarding the occurrence of resinous material, or "Wheelerite," in Winter Quarters coal, I have at present the following to report. Owing to the experimental difficulties encountered in this investigation, I am not yet able to give specific conclusions respecting all the samples submitted for examination:

The material, "Wheelerite," is described by Dana as being a resin found disseminated in the fissures and sometimes through the mass of lignite, and as being soluble in ether, and mostly soluble in alcohol; melting at 154 degrees C., and having composition of carbon 73.07 per cent; hydrogen, 7.95 per cent; oxygen, 1.898 per cent, corresponding to the formula  $C_5 H_6 O$ .

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Another resin of similar occurrence, which he calls "Ionite," is mentioned by Dana, of this he only says it is soluble in chloroform, nearly soluble in ether, and slightly soluble in alcohol.

The chemical constitution of these fossil remains, of which there are many, is but little understood. They are generally complex mixtures of distinct substances, and resin of similar origin shows a resemblance to each other.

The material experimented on by me was picked out of Castle Gate coal. That obtained from Winter Quarters coal shows the melting point and other proportions, and no difference between the resins from the two sources was observed. That this material is not altogether identical with Dana's "Wheelerite" is shown by the following:

The material was found to have no definite melting point, but began to soften at 155 degrees C., and did not completely melt under 170 degrees C.—different samples exhibiting slight variations in this respect.

This suggests, although it does not absolutely follow, that the material is not a definite material, but a mixture of resins; a conclusion borne out by the fact that under the microscope, different particles show different optical properties. Further, this resin is but slightly soluble in alcohol, nearly soluble in (a large volume) of ether, and wholly soluble in chloroform—a proof that the substance is a mixture and a resemblance to "Ionite." The following is a fractional analysis of its solubility in alcohol, ether and chloroform:

Soluble in alcohol.....	2.93 per cent.
Soluble in ether, not in alcohol..	92.28 per cent.
Total soluble in ether.....	95.21 per cent.
Soluble in chloroform, not in ether or alcohol.....	4.89 per cent.
Total soluble in chloroform...	100.00 per cent.

Although the resin responds to a reaction, given by Dana as characteristic of "Wheelerite," this is of no value in establishing the identity of the two, since every

resin that I have tested, including vegetable resin, does the same.

When subject to distillation this resin undergoes more or less decomposition, leaving some coke, and yielding a sublimate. This sublimate is somewhat viscous, more easily fusible than the original material, yields a partial solution to alcohol, and can be redistilled without apparent further decomposition. However, the degree and kind of decomposition to which the resin is subject is effected by the sharpness with which the heat is applied. A very hot flame applied to a sample contained in a narrow tube yielded more coke and less distillate, this latter yielding no solution to alcohol.

When in a mass the resin will not readily burn, as it melts and puts out its own flame. Suspended in the air in a condition of fine powder, it is inflammable, and would undoubtedly be explosive if approached by flame.

This resin is disseminated throughout Winter Quarters coal in microscopically fine particles, as well as occasional nodules. It is peculiar to no particular one of the four mines, nor is any part free from it. In the samples (all average of vein) thus far examined, I have found to exist in quantities of from six-tenths to 1 per cent, and should be inclined to place the average percentage in the coal between those figures. However, I have yet to establish this point more exactly, and to determine whether the quantity varies locally to any marked degree.

As to the effect of the presence of the resin in the coal, even in the quantity of 1 or 2 per cent, I believe that it would have but little, if any, influence in rendering the dust more liable to explosion. The resin being so isolated and diluted by the coal, that although the resin itself is more inflammable than the coal, there is not sufficient quantity or coherency for ignition. That is, the burning, if any, would start from the resin, there not being enough in one place to support combustion. Also, if the coal was sharply heated it would give off inflammable gases as readily as the resin. This was shown by heating in tubes, in the same flames, a sample of coal and a sample of resin.

In some of the samples of dust and soot taken from the mine after the explosion, there was found a resinous material, thought at first to be "Wheelerite." This was

noticeably so in the case of some sooty matter driven against the post, inside the fourth rise, No. 4 mine. The amount of resinous material present in the soot and ash of burned dust was nearly 6 per cent, easily soluble in alcohol. This material is not the resin above described, nor has any connection with it that I have discovered.

As there is every evidence of heat in this vicinity, the resinous material in this sample must have reached its lodgment by distillation.

The presence of a large quantity of soot shows that there must have been insufficient oxygen present to burn the hydro-carbon gases. These gases could only have originated from the distillation of coal. This resinous matter could be, and undoubtedly was, carried in the shape of gas without burning. If it emanated from "Wheelerite," its source must have been very rich in the latter to have produced such a quantity as 6 per cent in the material in which it finally condensed. A locality so rich in resin would be sufficient to account for the explosion. This possibility, of course, can be determined by examination of the coal. Some coal subject to destruction distillation yielded distillate resembling this resinous matter, and like it, soluble in alcohol. The distillate, as before observed, from the "Wheelerite," was only partially soluble in alcohol.

These, together with the fact that there was undoubtedly a destructive distillation of the coal dust, and that such distillation would certainly yield a distillate, convinces me that this and the resinous matter found in other samples of dust and soot, affected by the explosion, is a product of much distillation, having no relation to the "Wheelerite."

(Signed)

C. B. SPRAGUE,  
Chemist.

#### CLEAR CREEK MINE.

This mine is situated seven miles from Scofield on a branch of the Rio Grande Western Railway, and is owned by the Pleasant Valley Coal Company.

This mine was opened in 1899, and this year produced 207,949 short tons of coal, using 4,945 kegs of powder.

The improvements of this mine this year are: One eighteen-foot ventilating fan and engine, one eighty horse-power boiler, twenty-one dwelling houses, oil house, powder house, one set railroad track scales, and pipe line in the mine.

I made my first official visit of inspection to this mine on February 10th. I found the mine working full time, with two shifts, with fair ventilation.

I made my second visit to this mine on March 8th, and found the mine in about the same condition as on my previous visit.

On April 15th I made my third official visit of inspection to this mine. The mine was in good working order, well-timbered and in a safe condition.

I made my fourth official visit to this mine on June 8th, and found the mine working two shifts with 110 miners and thirty-four day men. I found the timbering to be in a very poor shape. I informed the mine foreman of this, and asked him to see to it at once. The ventilation was not in a very good condition, as there was too many men working in one current of air. I suggested to the mine superintendent that he should build two over-casts, which would remedy the same, both of these suggestions being complied with.

My fifth visit was June 28th. The mine was working about half time, with 104 miners and twenty-six day men. Ventilation was good, and all places timbered and made safe.

During the year I made four other visits to this mine and found it, each time, to be in good working condition, properly ventilated and well timbered.

As this mine is a heavy consumer of powder I suggested that the company furnish the men with cans that would hold 6½ pounds of powder, as I thought a keg was too much powder to take into the mine where there is so much powder used. I made this suggestion in November, 1899; the company furnished the cans, but the miners refused to use them; there being no law I could not enforce it, and they were not used until the middle of May after the Scofield disaster, when the miners realized that there was danger in taking too much powder into the mine.

### SUNNYSIDE MINE.

This mine is owned by the P. V. Coal Company, and is situated about seventeen miles east of Mounds on a branch of the Rio Grande Western Railway.

This mine was opened during 1899, and in 1900 produced 132,222 short tons of coal, using 2,925 pounds of powder.

The improvements at this mine during 1900 are: Two Worthing pumps, water pipe lines, two lowering drums, one 66 by 16 tubular boiler, twenty cottages, coal mining machine, air compressor, trestle and chutes, one steam hoist, two water tanks, one blacksmith shop, one 18 ft. fan and one 25 ft. Guibal fan.

On my first visit of inspection to this mine, February 3rd, No. 1 mine was working two shifts with six men; No. 2 mine was working two shifts with 187 men. The output for this date was 684 tons. The ventilation was not in a very good condition, as the stoppings were all leaking.

There were no permanent doors or stoppings up.

On account of this failure to put up permanent stoppings and doors I found considerable smoke throughout the mine, and suggested that the same should be remedied at once. On this visit I discovered some carburetted hydrogen gas in No. 1 mine and came to the conclusion that it was necessary to put on a fire boss, whose duty it should be to see to timbering and loose rocks in the rooms and all the traveling ways, and also to see to the ventilation, which was not very good at this time.

March 19th I made my second visit of inspection to this mine. The mine was working full time, the ventilation was better on this visit than on my previous visit, and in general the mine was looking better.

No. 1 mine was working two shifts; the water in the slope was increasing.

On my third official visit to this mine, on June 11th, both mines were in good condition.

July 12th I made my fourth official visit of inspection. I found No. 1 working three shifts and making large improvements; putting up trestle and dumps and large fan. No. 2 mine was about all worked out. No. 3 was started and was looking well, with good ventilation.

I made another visit to this mine on October 12th-

14th; I found the mine working full time. No. 1 was almost ready to produce coal. No. 3 was working 200 men in the mine; in general was in good condition. In some of the rooms I found some of the miners tamping their shots with coal dust, which was against the rules, and I notified the mine foreman and asked him to look to it at once.

Sunnyside mine will, in the near future, be one of the leading mines of the State, as the coal has good coking qualities and is good steaming coal. The camp is being built up very rapidly, there being over sixty dwelling houses, a church, large hotel, store and a depot and electric plant.

#### GRASS CREEK MINE.

This mine is the property of the Grass Creek Coal Company, and is situated on the Grass Creek Terminal R. R., six miles off the E. & P. C. branch of the U. P. R. R.

I made an official visit of inspection to this mine on February 9th. The mine was working full time with 38 miners and eight day men.

The ventilation was good but all rooms were very poorly timbered. I suggested to the mine superintendent and mine foreman that they properly timber the mine.

I again visited this mine on June 18th, and found the mine working about four days a week with twenty men. On this visit I found the ventilation very poor, as this mine is ventilated by natural ventilation; during the summer months the air is not very good, so I asked the company to put in a new fan, as it was impossible to run the mine without it.

On August 4th I made another visit to this mine and found the mine was still working only four days a week with twenty men, and the ventilation was still in a very poor condition, and as the superintendent was away, I notified the mine foreman that they must put the fan in and have it in working order by November 1, 1900, and this he promised to do.

On November 16th I made another visit to this mine; the mine was in about the same condition, but the new fan was nearly completed.



On the 5th day of December I received a letter from the superintendent stating that the fan was completed and the mine was in good shape and well ventilated.

#### WASATCH MINE.

This mine is the property of the Weber Coal Company, and is situated about three miles east of Coalville on a spur of the E. & P. C. branch of the U. P. R. R.

The output of this mine for 1900 was 42,642 short tons, using 16 kegs of powder. The only improvements at this mine during 1900 was mine cars, \$300.00.

On my first official visit to this mine on February 10th, the mine was working full time with forty men, with ventilation and timbering in a fair condition. This mine is bothered more or less with "dob-fires," and it affects the atmosphere of the mine.

This coal being so combustible, it makes it necessary to take all the slack out of the mine. The mine is worked on pillars and has been worked so for the last three years, and it will take them six months more to clear them up; when this is done they will start a newlift, which will change the condition of things in general.

June 19th I visited this mine again. The mine was working only four days a week, and the condition of everything was about the same as on my previous visit.

August 2nd I made another visit to this mine; the mine was not in a very good condition; the ventilation was very poor, but the mine was well timbered and working four days a week.

The dust in this mine is dampened with a sprinkling car twice a week.

November 14th I visited the mine; it was working every day, with fair ventilation, with the exception of a few places where it was very warm; in these places I instructed the superintendent to let the men work only four hours per day in this place and the remainder of the day in fresh air. It is necessary to work these places to remove the coal and slack from the mine.

#### ABERDEEN MINE.

This mine is the property of the Whitmore Bros. and Ballinger of Price, and is situated about eight miles north of Price.

The production of this mine this year was 750 tons. This was used for domestic purposes in Price.

The vein that is worked in this mine is twenty-two feet thick of clean coal, and is of good steaming and domestic qualities.

#### THOMAS MINE.

This mine is the property of the Sterling Coal and Coke Company, and is situated six miles south of Manti, on a terminal of the Sanpete Valley R. R.

I made four visits to this mine during the year. The mine employs about six men and produces just enough coal for their own railroad use.

Their main tunnel is driven across the measures through the rock a distance of over 2,700 feet for the purpose of tapping the lower coal measures. When this is completed it will make one of the finest coal mines in Utah, as the coal measures are to the rise from the tunnel, which will make it an easy matter for drainage and haulage.

#### EDMONDS MINE.

This mine is situated about six miles south of Manti and is owned and operated by Jacob Johnson of Manti. It has natural ventilation, employs about three men during the year and the output this year was 2,000 tons.

#### CORRY MINE.

This mine is owned by Andrew Corry of Cedar City, and is situated near Cedar City, Iron County.

The production of this mine for 1900 was 250 tons. Improvements at this mine were: development, \$500.00.

#### BLACK BABY MINE.

This mine is owned and operated by Black Baby Mining Company, J. T. Faner, manager. It is situated near Green River, Grand County, on the R. G. W. Railway. The production of coal for 1900 was 180 tons.

**DESERET MINE.**

This mine is owned and operated by the Deseret Coal Company, and is situated in Connellsville, thirteen miles east of Fairview.

The production of this mine for 1900 was 2,500 tons, which was hauled to Sanpete Valley for domestic use. This property has lately been sold to Jesse Knight of Provo, who will take charge of the same January 1, 1901.

**NEW YORK MINE.**

This mine is situated one-half mile west of the Deseret mine and is owned and operated by a New York company under the management of J. S. Harkness of Scofield. The production for 1900 was 3,000 tons. The coal is hauled to Sanpete Valley for local trade.

**DEXTER MINE.**

This mine is owned by John Dexter of Coalville, and is situated one mile southeast of Coalville, Summit County. 1900 production, 254 tons. The improvements for 1900 amounted to \$75.00.

**BALLARD MINE.**

This mine is owned and operated by Ballard Bros. of Thompsons Springs, Utah, and is situated near Thompsons station on the R. G. W. Railway. This mine produced 350 tons of coal in 1900. The improvements: chute and track, cost \$185.00.

**KIMBALL MINE.**

This mine is situated at Scofield, Carbon County, and is owned and operated by O. G. Kimball of Scofield. Production for 1900 was 225 tons; improvements cost \$47.50.

**UINTAH COUNTY MINES.**

In the Ashley District there are thirty-four small mines which produced about 6,500 tons of coal in 1900. All of this coal was used in the valley.

## HUNTINGTON CREEK MINES.

The Huntington Creek mines are situated on Huntington Creek in Emery County. There are over one hundred small openings on this creek, fifteen of which are about two miles south of Connelleville, owned and operated by Carlston, Lund and Company. In these openings they have veins of clean coal from six to seventeen feet thick, which lays in four different veins. The other openings are situated lower down the creek and are owned and operated by Don Robins and the people of the surrounding towns, and are on the same vein as mentioned above.

## CARBONDALE MINE.

This mine is owned and operated by the Carbondale Coal Company, and is situated at Hales, six miles north of Scofield.

All of this coal has good steam and coking qualities.

Analyses of coal from different mines in the State.

## WINTER QUARTERS MINE.

Water .....	3.33 per cent.
Volatile matter .....	42.67 per cent.
Fixed carbon .....	49.06 per cent.
Ash .....	4.94 per cent.
<hr/>	
Total .....	100.00 per cent.

## CASTLE GATE MINE.

Water .....	1.50 per cent.
Volatile matter .....	44.62 per cent.
Fixed carbon .....	50.22 per cent.
Ash .....	3.20 per cent.
<hr/>	
Total .....	100.00 per cent.

**SUNNYSIDE MINE.**

Water .....	1.68 per cent.
Volatile matter .....	36.14 per cent.
Fixed carbon .....	57.88 per cent.
Ash .....	4.30 per cent.

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Total .....100.00 per cent.

**CLEAR CREEK MINE.**

Water .....	3.42 per cent.
Volatile matter .....	43.56 per cent.
Fixed carbon .....	48.38 per cent.
Ash .....	4.64 per cent.

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Total .....100.00 per cent.

**CASTLE VALLEY MINES.**

Water .....	1.85 per cent.
Volatile matter .....	36.01 per cent.
Fixed carbon .....	56.61 per cent.
Ash .....	4.95 per cent.
Sulphur .....	.58 per cent.

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Total .....100.00 per cent.

**STERLING MINE.**

Water .....	5.67 per cent.
Volatile matter .....	39.24 per cent.
Fixed carbon .....	49.79 per cent.
Ash .....	5.30 per cent.

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Total .....100.00 per cent.

**HUNTINGTON MINE.**

Water .....	1.51 per cent.
Volatile matter .....	43.52 per cent.
Fixed carbon .....	51.31 per cent.
Ash .....	3.21 per cent.
Sulphur .....	.45 per cent.

---

Total . . . . .100.00 per cent.

**WASATCH MINE, COALVILLE.**

Water .....	8.38 per cent.
Volatile matter .....	46.89 per cent.
Fixed carbon .....	40.45 per cent.
Ash .....	3.33 per cent.

---

Total .....100.00 per cent.

**GRASS CREEK MINE, COALVILLE.**

Water .....	7.28 per cent.
Volatile matter .....	45.79 per cent.
Fixed carbon .....	43.25 per cent.
Ash .....	3.25 per cent.
Sulphur .....	.23 per cent.

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Total .....100.00 per cent.

**IRON COUNTY.**

Water .....	3.00 per cent.
Volatile matter .....	44.41 per cent.
Fixed carbon .....	44.47 per cent.
Ash .....	10.12 per cent.

---

Total .....100.00 per cent.

**FATAL ACCIDENTS OF 1900.**

January 13th—On this date Isaac Williams, a miner, was killed in Winter Quarters mine No. 1.

At the time of the accident Williams was walking along the rope road and at a point where the trips make a 90 per cent curve he stopped to let a trip pass, but it jumped the track and Williams was caught between the trip and the rib and instantly killed.

February 7th.—On this date Charles Musig was killed in the Morrison mine. At the time of the accident Musig was firing two shots; he had lighted one and was in the act of lighting the other when the first shot went off and injured him so badly that he died shortly after.

February 21st—On this date Fran Cresto was instantly killed in the Castle Gate mine.

At the time of the accident Cresto was in the act of loading a car of coal, when a rock fell from the roof and struck him on the head, killing him instantly.

July 28th—On this date Evan Williams was killed in Winter Quarters mine. At the time of the accident Williams was standing on the track when a trip of empty cars came along and struck him, causing instant death.

July 30th—On this date Richard White was fatally injured in the Castle Gate mine. At the time of the accident White was riding on the rope of an ingoing trip, when it ran into a rock which had fallen on the track. White was thrown to the ground and received injuries which resulted in death a few hours later.

September 8th—On this date T. Pratt was killed in the Winter Quarters mine by a piece of coal falling from the roof and striking him on the head, killing him instantly.

October 3rd—On this date John Marlotte was killed in the Castle Gate mine. He was struck on the head by some rock, which fell from the roof, causing instant death.

#### NON-FATAL ACCIDENTS OF 1900.

January 1st—On this date Carl Gemmel was injured in the Winter Quarters mine by some coal falling on his foot.

January 7th—On this date J. F. Anderson was injured in the Winter Quarters mine. He was knocked down by an empty trip and two of the cars passed over his left leg, bruising and lacerating it.

January 16th—On this date Frank Richmond was injured in the Sunnyside mine by being struck on the back by some falling coal.

January 18th—On this date William Ayre, Jr., was injured at the Clear Creek mine. His horse ran away, and while running after it his foot got caught in the tail-chain, the horse drug him some distance, dislocating his ankle joint.

January 20th—On this date Oscar Camp was injured in the Winter Quarters mine. A falling prop

struck him on the head, causing two lacerated scalp wounds.

January 23rd—On this date Thomas Frank was injured in the Castle Gate mine by a piece of coal falling and striking him on the foot.

January 25th—On this date Steve Nyland was injured in the Castle Gate mine by some hot oil falling on his foot, causing ulceration.

January 25th—On this date H. A. Miller was injured in the Winter Quarters mine by a piece of coal falling and striking him on the foot.

January 30th—On this date Enos Pedot was injured in the Sunnyside mine by a car running over the little finger of his left hand.

February 1st—On this date A. Hoghlund was injured in the Clear Creek mine by a piece of coal falling from a mine car and striking him on the foot.

February 6th—On this date R. O. Ruesmessen was injured in the Sunnyside mine by a piece of shale falling from roof and striking him on the right arm.

February 13th—On this date John Kari was injured at the Clear Creek mine. He fell from a railroad car, striking his head on the bumper, fracturing the parietal bone.

February 14th—On this date John Williams was injured in the Winter Quarters mine by a fall of rock from the roof, which struck him on the foot.

February 14th—On this date Matt Louma was injured in the Winter Quarters mine by a rock sliding down from a cave and striking him on the left leg.

February 18th—On this date James Ryan was injured in the Sunnyside mine. Ryan was walking along the rope when a trip started; the rope struck him on the light leg, breaking it below the knee.

February 19th—On this date Levi Jones was injured in the Winter Quarters mine by a rock falling from the roof and striking him on the head.

February 22nd—On this date W. R. Miller was injured in Winter Quarters mine. A prop fell and struck him on the left side, breaking one rib.

March 1st—On this date William Goode was injured in the Winter Quarters mine by a piece of coal falling from the roof and striking him on the head.



March 6th—Thomas Griffith was injured in the Castle Gate mine. While attempting to sprag a mine car his finger got caught between the sprag and the wheel.

March 6th—On this date William Collet was injured in Clear Creek mine. An empty car passed over his right foot, inflicting a flesh wound.

March 15th—W. J. Wilcox was injured in the Winter Quarters mine by a fall of coal, which struck him on the foot.

March 20th—U. R. Miller was injured in Winter Quarters mine by a fall of coal striking him on the right foot.

April 9th—John K. Gilbert was injured in Winter Quarters mine by being run over by a mine car.

April 10th—On this date Isaiah Llewellyn was injured in the Winter Quarters mine by a piece of clod falling from the roof and striking him on the shoulder.

April 14th—On this date William Ayre, Jr., was injured in Clear Creek mine by getting his foot caught between the bumpers of two cars.

June 17th—Thomas McEwain was injured in the Winter Quarters mine by a small piece of slate falling and striking him on the left arm.

June 20th—Frank Crocki was injured in the Winter Quarters mine by a piece of coal falling from the roof and striking him on the foot.

July 10th—William Cook was injured in the Winter Quarters mine by falling in front of a moving mine car.

July 12th—Jacob Lundi was injured in the Winter Quarters mine by a piece of coal falling and striking him on the left leg, breaking it.

July 12th—T. W. Taylor was injured in Winter Quarters mine by being kicked on the leg by a horse.

July 13th—Andrew Johnston was injured in Winter Quarters mine by a mine car passing over his finger.

July 13th—W. J. Ruff was injured in the Winter Quarters mine by cutting his hand with a hand-ax.

July 20th—Dominic Bergera by a piece of slate falling from the roof and striking him on the right leg.

July 23rd—John Wiloughby was injured in Winter Quarters mine by a small piece of slate falling from the roof and striking him on the foot.

August 13th—Oscar Kamila was injured in Winter

Quarters mine by being struck by some flying coal from a shot.

August 22nd—Joseph Carroll was injured in Winter Quarters mine by a piece of clod falling from the roof and striking him on the head.

August 28th—Fred Wolf was injured in Winter Quarters mine. He was thrown from a mule and the hook on the tail chain caught in his shoulder, inflicting a puncture wound.

September 11th—Fred Crow was injured in Castle Gate mine. He was standing on the track when an empty trip struck him, breaking his collar-bone.

September 24th—On this date W. L. Thomas was injured in Clear Creek mine by getting his foot caught between two mine cars.

November 5th—On this date Andrew Johnstone was injured in the Winter Quarters mine by being run over by a loaded mine car. He was riding on the car when he fell off the car and was run over by it. He received bruises on the head and several cuts on the body. He was sent to St. Mark's hospital, Salt Lake City, where he died from blood-poisoning.

November 30th—On this date Heber Frankland was injured in the Winter Quarters mine by being caught between two cars, which crushed and bruised his hip and back.



314014

REPORT

OF THE

COAL MINE INSPECTOR

OF THE

STATE OF UTAH

FOR THE

YEARS 1901-1902.



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VHWE

Complements of  
**GOMER THOMAS.**  
STATE COAL MINE INSPECTOR.  
SALT LAKE CITY, UTAH.

**REPORT**

**OF THE**

**COAL MINE INSPECTOR**

**FOR THE**

**STATE OF UTAH,**

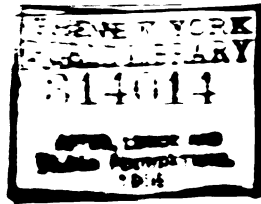
**FOR THE YEARS 1901 AND 1902.**

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**SALT LAKE CITY,  
STAR PRINTING COMPANY.**

**1908.**





# REPORT OF STATE COAL MINE INSPECTOR.

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Office of the Coal Mine Inspector,  
Salt Lake City, Utah.

To His Excellency, Heber M. Wells, Governor of Utah:

Sir:—In compliance with the requirements of the Act of March 14, 1901, relative to the Mine Inspector's Reports of the Coal and Hydrocarbon, I have the honor to submit to you the sixth annual report of the department of Mines and Mining.

Yours very respectfully,  
GOMER THOMAS,  
State Coal Mine Inspector.

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## INTRODUCTION.

The year 1901 has been a prosperous one for all connected with the mining and transportation of coal, and coke has been unusually active during the past year, but the mines were equal to the demands.

There has been no unusual friction between capital and labor in the state, except the strike which started January 13th, and continued to the 21st of February. This strike was the cause of a decrease in the production of coal, had the strike not occurred during the busy season, it would be fair to assume that the production of coal would have reached a larger total. The statistical report has been arranged as to accord with the calendar year and that part which is devoted to the inspection of mines extends from December 31, 1900, to December 31, 1901. It contains tables and statistics showing the location of mines, total number of tons of coal

mined, number of days worked, number of employees, number of accidents and number of pounds of powder used.

I am gratified to state that this has been the most successful year in the history of the coal mine industry in the State of Utah. All employees have worked to the comfort, benefit and health of their employers; wages have been good and employment has been uniformly steady and fairly remunerative.

The brisk demand for coal increased in production in 1901, which was 1,382,470 short tons against 1,233,978 short tons in 1900, an increase of 158,637 short tons. The product of coal for 1901 was the largest ever made in this state and it indicates that the State of Utah can meet any demand that is likely to be made for the next twenty years at least. While the areas of coal is not limited, the mines will be equal to a proportionate increase for years to come, but the production of coal is limited only by the demand and the capital invested.

In the production of 1,382,470 short tons of coal, nine lives were lost in and about the mines, and twelve persons were injured, this loss of lives made five wives widows and ten children orphans. The production of coal per life was 153,608 short tons, while the production per non-fatal accident was 115,206 short tons.

The number of employees in and about the mines during 1901 was 1,780. The total production of coal was 1,382,470 short tons, which shows an average production per employee of 777 tons, which is much higher than the average. The number of fatalities for every 1,000 persons employed in 1901 was 4. In my opinion all concerned can be congratulated on the good results. There were four accidents from falls of coal and three from falling rock, one run over by cars, one fell into a fire outside of the mine, these four accidents were the cause of the loss of nine lives.

After a careful examination of the reports of all the accidents in and about the mines, I have no hesitancy in asserting that at least 80 per cent of them could have been averted had the victims and their fellow workmen taken necessary precautions.

**PRODUCTION OF COAL, COKE AND GILSONITE, AND IM-  
PORTS, EXPORTS AND CONSUMPTION OF  
SAME IN UTAH FOR 1901.**

	Bituminous	Anthracite	Coke	Gilsonite.
Production in Utah..	1,382,470	.....	50,620	3,300
Importation into Utah	342,395	5,348	2,800	.....
Total .....	1,724,865	5,348	53,420	.....
Exportation from Utah .....	648,081	.....	2,569	.....
Consumed in Utah...	1,594,784	5,348	50,851	.....

**TABLE SHOWING THE COAL TONNAGE FOR 1901 AS COM-  
PARED WITH 1900.**

COUNTIES.	Short Tons. 1900	Short Tons. 1901	Short Tons. Gain.	Short Tons. Loss.
Carbon .....	1,085,374	1,263,885	178,511	.....
Summit .....	75,252	55,249	.....	20,003
San Pete .....	3,500	2,585	.....	915
Emery .....	5,500	1,500	.....	4,000
Uintah .....	6,500	7,750	1,250	.....
Other small mines...	47,250	51,500	4,250	.....
Total .....	1,223,376	1,382,470	184,111	24,918
Net gain .....				159,193

**TABLE SHOWING NUMBER OF FATAL ACCIDENTS AND THE  
NON-FATAL, AND THE COUNTY IN WHICH THE SAME  
OCCURRED, DURING THE YEAR 1901.**

COUNTIES.	Fatal.	Non-Fatal.	Total.
Carbon .....	9	9	18
Summit .....	.....	2	2
San Pete .....	.....	1	1
Total .....	9	12	21

**TABLE SHOWING THE NUMBER OF MINES OPENED, SUS-  
PENDED AND ABANDONED DURING 1901.**

COUNTIES.	No. of Mines Opened.	No. of Mines Suspended.	No. of Mines Abandoned.
Carbon.....	5	None.	None.
Emery.....	5	None.	None.
Uintah.....		2	None.
<b>Total.....</b>	<b>10</b>	<b>2</b>	<b>None.</b>

**FEEES COLLECTED FOR INSPECTION OF COAL MINES.  
1891.**

NAME OF MINE.	WHERE LOCATED.	AMOUNT.
P. V. Coal Company's Mine.....	Carbon County.....	\$160.00
Utah Fuel Company.....	Carbon County.....	80.00
Grass Creek.....	Grass Creek.....	30.00
Weber Coal Company.....	Summit County.....	40.00
Sterling Coal and Coke Company...	San Pete County.....	10.00
For Mine Foreman's Certificate.....		9.00
<b>Total.....</b>		<b>\$329.00</b>

PRODUCTION OF COAL IN UTAH DURING THE YEAR 1901.

Countries.	Number of Mines.	Total Product in Short Tons.	Made into Coke, Short Tons.	Total Value.	Average Price per Ton.	Average No. of Days Worked.	Average No. of Men Employed.
Carbon .....	26	1,933,886	51,607	.....	\$1.18	1,719	1,619
Summit .....	10	55,249	.....	.....	"	458	90
San Pete .....	6	2,585	.....	.....	"	450	12
Emery .....	32	1,500	.....	.....	"	560	9
Uintah .....	36	7,750	.....	.....	"	100	50
Other Small Mines .....	.....	51,500	.....	.....	.....	.....	.....
Total Value.....	.....	.....	.....	\$1,631,314.60	.....	.....	.....

TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES OPERATED AND DAYS  
WORKED IN 1900 AND 1901.

Countries.	1901		1900		1901		1900		1901		1900	
	No. of Mines	Worked	No. of Mines	Worked	No. of Mines	Worked	No. of Mines	Worked	Average No. of Days Worked	Gain.	Loss.	Average No. of Days Worked
Carbon .....	21	26	26	10	0	0	1,730	1,710	11	170	11	170
Hummel .....	6	10	10	6	0	0	200	450	250	410	250	450
Manpete .....	6	6	6	6	0	0	150	500	410	500	410	500
Emery .....	27	32	32	32	0	0	100	100	100	100	100	100
Uintah .....	38	38	38	38	0	0	100	100	100	100	100	100

TABLE SHOWING THE NUMBER OF TONS OF COAL MINED, NUMBER OF TONS OF COKE PRODUCED,  
NUMBER OF DAYS WORKED, NUMBER OF EMPLOYEES, PERSONS KILLED AND  
INJURED, ETC., IN THE YEAR 1901.

NAME OF MINES.	COUNTY.	Total Production of Coal.	Total Production of Coke.	No. of Days Worked.	No. of Men Employed.	No. of Fatal Accidents.	No. of Non-Fatal Accidents.	No. of Pounds of Powder.	No. of Pounds of Dynamite.	No. of Mules and Horses.	No. of Steam Boilers.	No. of Coke Ovens.
Winter Quarters No. 1....	Carbon.....	282,287	.....	228	276	2	1	72,780	.....	58	6	.....
Winter Quarters No. 4....	".....	106,287	.....	264	98	2	.....	76,980	.....	28	1	.....
Winter Quarters No. 5....	".....	1,675	.....	73	94	.....	.....	530	.....	2	.....	.....
Clear Creek.....	".....	245,586	.....	208	245	.....	3	101,355	.....	36	4	.....
Castle Gate.....	".....	337,319	51,607	228	480	1	.....	.....	34,150	40	7	204
Sunny Side No. 1.....	".....	79,081	.....	280	110	2	3	13,758	.....	13	.....	.....
Sunny Side No. 2.....	".....	212,171	.....	280	313	2	2	310,525	.....	40	.....	.....
Wasatch.....	Summit.....	26,761	.....	208	35	.....	1	1,500	.....	9	4	.....
Grass Creek.....	".....	28,498	.....	250	55	.....	1	11,250	.....	6	2	.....
Sterling.....	".....	1,885	.....	300	6	.....	1	500	.....	1	.....	.....
Aberdeen.....	Sanpete.....	500	.....	108	3	.....	.....	.....	.....	.....	.....	.....
Castle Valley.....	Carbon.....	500	.....	180	3	.....	.....	.....	.....	.....	.....	.....
Huntington.....	Emery.....	700	.....	150	2	.....	.....	.....	.....	.....	.....	.....
Deseret.....	".....	.....	.....	150	2	.....	.....	.....	.....	1	.....	.....
Edmonds.....	Sanpete.....	700	.....	.....	6	.....	.....	.....	.....	.....	.....	.....
Uintah.....	Uintah.....	7,750	.....	100	50	.....	.....	.....	.....	.....	.....	.....
Cedar Creek.....	Emery.....	300	.....	80	2	.....	.....	250	.....	.....	.....	.....
Other Small Mines.....	.....	51,500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total .....	.....	1,382,470	51,607	.....	1,780	9	12	589,406	34,150	294	24	204



**TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES  
IN 1901 COMPARED WITH 1900.**

COUNTIES.	1900	1901	Gain.	Loss.
Carbon.....	1,323	1,619	296	.....
Summit.....	89	90	1	.....
San Pete.....	8	12	4	.....
Emery.....	12	9	.....	3
Uintah.....	60	50	.....	10
Total.....	1,492	1,780	301	13

Showing a gain of 288 men in 1901.

**COAL PRODUCTION OF THE SEVERAL MINES IN THE STATE  
OF UTAH FOR 1901.**

NAME OF MINE	Operated by	Number of Tons.
Winter Quarters No. 1.....	P. V. Coal Company .....	282,287
Winter Quarters No. 4.....	P. V. Coal Company .....	105,287
Winter Quarters No. 5.....	P. V. Coal Company .....	1,675
Clear Creek .....	P. V. Coal Company .....	245,586
Castle Gate .....	P. V. Coal Company .....	337,319
Sunny Side No. 1.....	P. V. Coal Company .....	79,061
Sunny Side No. 2.....	P. V. Coal Company .....	212,171
Wasatch .....	Weber Coal Company .....	28,751
Grass Creek.....	Grass Creek Coal Company...	28,498
Sterling .....	.....	1,885
Aberdeen .....	Whittemore & Ballinger.....	500
Castle Valley.....	.....	500
Huntington .....	.....	700
Deerret .....	Deerret Coal Company.....	.....
Edmonds.....	Manti Coal Company .....	700
Uintah.....	.....	7,750
Cedar Creek.....	Cedar Creek Coal Co.....	300
Other Small Mines .....	.....	51,500
Total.....	.....	1,382,470

SHOWING THE NUMBER OF MINES EMPLOYING THE DIFFERENT METHODS OF VENTILATION AND  
THE THREE KINDS OF OPENINGS.

County.	CHARACTER OF OPENING.		Small— No. of Kind of Opening.	Total.	MODE OF VENTILATION.		Natural
	Drift.	Slope.			Fan.	Steam Jets and Exhaust from Pump.	
Carbon.....	23	3	.....	26	9	.....	17
Summit.....	3	2	.....	5	2	.....	3
San Pete.....	6	.....	.....	6	.....	.....	6
Emery.....	32	.....	.....	32	.....	.....	32
Uintah.....	36	.....	.....	36	.....	.....	36

**TABLE SHOWING NUMBER OF LARGE AND SMALL MINES  
IN THE STATE AND THE NUMBER OF EACH THAT  
WERE IN OPERATION IN 1901.**

COUNTIES.	Number of mines which employed more than 10 men.	Number of mines that employed less than 10 men.	Total by counties.	Number of large mines in operation during 1901.	Number of small mines in operation during 1901.	Total number of mines in operation in 1901.
Carbon .....	7	19	26	7	19	26
Summit .....	2	3	5	2	3	5
San Pete .....	2	4	6	2	4	6
Emery .....		32	32		32	32
Uintah .....		36	36		36	36
Iron .....		13	13		13	13
Grand .....		6	6		6	6
Total.....						124

TABLE SHOWING COMPARISON OF THE CASUALTIES OF 1901 WITH THOSE OF 1900.

COUNTIES.	1900.				1901.				Total.	
	Fatal.	Serious.	Non-serious.	Total.	Fatal.	Serious.	Non-serious.	Total.	Gain.	Loss.
Carbon.....	208	.....	63	271	9	.....	9	18	.....	253
San Pete.....	1	.....	1	1	.....	.....	1	1	.....	.....
Summit .....	.....	.....	.....	.....	.....	.....	2	2	2	.....

TABLE SHOWING LOCATION, ETC., OF COAL MINES IN UTAH.

NAME OF MINE.	NAME OF OPERATOR.	NAME OF SUPT.	POST OFFICE ADDRESS.
Winter Quarters No. 1	P. V. Coal Co.	Thomas J. Parmley	Scotfield
Winter Quarters No. 4	P. V. Coal Co.	Thomas J. Parmley	Scotfield
Winter Quarters No. 5	P. V. Coal Co.	Thomas J. Parmley	Scotfield
Clear Creek	P. V. Coal Co.	H. B. Williams	Clear Creek
Castle Gate	P. V. Coal Co.	Frank Cameron	Castle Gate
Sunnyside No. 1	Utah Fuel Co.	Joe. A. Sharp	Sunnyside
Sunnyside No. 2	Utah Fuel Co.	Joe. A. Sharp	Sunnyside
Wasatch	Utah Fuel Co.	T. J. Lewis	Coalville
Grass Creek	Weber Coal Co.	W. L. Hanson	Coalville
Deerret	Grass Creek Coal Co.	Mr. Tuttle	Manti
Huntington	Deerret Coal Co.	Harkness	Scotfield
Thomas	New York Coal Co.	H. S. Kerr	Manti
Aberdeen	Sterling Coal Co.	A. Ballinger	Price
Ballard	Whittmore Bros.	H. G. Ballard	Thompsons
Corry	Ballard Bros.	A. Corry	Cedar City
Black Baby	A. Corry	J. T. Faser	Green River
Kimball Mine	Black Baby Coal Co.	O. G. Kimball	Scotfield
Dexter	O. G. Kimball	John Dexter	Coalville
Edmonds	Dexter & Sons	Jacob Johnson	Spring City
Castle Valley	Manti Coal Co.	A. M. Johnson	Orangerville
Cedar City	A. M. Johnson	Wm. Howard	Huntington
Bartholomew	Cedar City Coal Co.	A. Bartholomew	Vernal
	Bartholomew		

There are thirty-five other small mines that are not mentioned above.

TABLE SHOWING COAL PRODUCTION IN UTAH FROM 1876  
TO 1901 INCLUSIVE.

Year.	Number of Tons Produced.	Gain, Tons	Loss, Tons
1876 .....	50,400	.....	.....
1877 .....	50,400	.....	.....
1878 .....	67,200	16,800	.....
1879 .....	225,000	157,800	.....
1880 .....	225,000	.....	.....
1881 .....	225,000	.....	.....
1882 .....	250,000	.....	.....
1883 .....	250,000	.....	.....
1884 .....	250,000	.....	.....
1885 .....	213,120	.....	36,880
1886 .....	200,000	.....	13,120
1887 .....	180,021	.....	19,979
1888 .....	259,501	79,480	.....
1889 .....	236,651	.....	22,850
1890 .....	318,159	81,608	.....
1891 .....	371,045	52,886	.....
1892 .....	361,314	.....	9,731
1893 .....	418,049	56,735	.....
1894 .....	447,276	22,221	.....
1895 .....	172,958	.....	274,328
1896 .....	503,243	330,235	.....
1897 .....	582,092	78,849	.....
1898 .....	673,297	91,205	.....
1899 .....	878,122	204,826	.....
1900 .....	1,233,978	355,856	.....
1901 .....	1,392,613	158,637	.....

## WINTER QUARTERS MINE NO. 1.

The Winter Quarters Mine is in the Winter Quarters Canyon, a mile and a half from Scofield. This mine is the property of the Pleasant Valley Coal Company, and is situated about sixteen miles from Colton, on a branch of the Rio Grande Western Railroad. This mine is one of the oldest mines in the State and one of the largest producers, producing in 1901, 282,287 short tons, using 72,780 pounds of powder. This mine is artificially ventilated with a 15-foot Capell fan, running at the rate of 115 revolutions per minute, producing 60,338 cubic feet of air per minute, which is distributed to all the working places in the mine. This mine has a record of output of about 1,200 tons of excellent coal daily. The main entry is 6,000 feet in length with a parallel entry of equal length, which is used as a return air-way and also traveling way for employees to go and come from their work in addition to which there are many miles of cross entry levels and rooms. The vein of coal in this mine ranges from nine to twelve feet in thickness. In the interior operation of the mine, two electric hoists and one electric locomotive are employed, the electric hoists dropping the loaded cars down the main entry, where the electric locomotive takes it out to the head of the rock tunnel, which is 1,500 feet in from the mouth of the entry to the head of the rock tunnel, being six degrees of a pitch. The vein dips from southeast to the northwest. There are over twenty miles of track in the mine and also a pipe line throughout the entire mine, which is used for spraying purposes to keep the mine constantly damp, as the dust is dangerous if it should become dry. All the main entries are lighted by electricity. The return entry which is used as a passage way by the employees, being ventilated in this manner for a distance of 2,000 feet. Every precaution is taken to avoid any risks from any cause.

The power is generated at the Winter Quarters plant by two seven 150-horse power boilers, two 250-horse power "A. B. W. A." engines, directly connected with the boilers and two generators. One 150-horse

power "Corliss" engine, belted to two electric generators.

The company's fine two-story office building and hotel is heated by steam and lighted by electricity.

The men are given free transportation by the company to and from the work between Scofield and the mine. The miners mine the coal by the ton.

On my official visit to No. 1 mine on Jan. 5-6-8-9, 1901, on these dates, I found all the rooms fifth and sixth level on eighth rise entry a little dry, or dryer than they should have been. The air was not very good on these levels, but was good in all other parts of the mine. In general the mine was well timbered. On the following day I informed the mine superintendent of the condition of the mine and told him to see to this at once, which he did and instructed the water-men to water the mine twice a week.

From the 13th of January to the 21st of February, 1901, the mine was idle on account of a strike, in which the employees wanted an increase in their wages. At the end of 38 days they all went back, or nearly all. Those who took part in the strike were refused work and had to leave the camp, and their places were filled with foreign labor, which was a great drawback to the management, as the new men could not produce the amount of coal, nor quality. This strike was like all others—both sides were losers, the employees having the worst of it.

On my second official visit, on Feb. 22nd to 24th, 1901, I examined mine No. 1. I went through the mine and found that the condition of things in general had improved since my last visit. This mine was well watered and timbered and also well ventilated.

On my third visit, on May 9th, 1901, to this mine, I was very much pleased to see such a great change for the better in the ventilation. I visited room 25, on fifth level, off eighth rise, where Joe Farrish was killed. After a careful examination I would judge that about twenty tons of coal fell at the time he was killed. I questioned his partner, who was working with him at the time, in regard to the accident. He told me that they had examined the room a few minutes before the



accident, and that it was safe. In my opinion, it was one of those unavoidable accidents.

On this visit I found the management making lots of improvements. One was a new fan at No. 1 mine, which was needed very badly, for the old fan was not able to do the work.

On May 9th, 1901, I examined the water-men's report and found it all right. I also examined the shot-men's report and found it all right.

On my fourth official visit to this mine, on Aug. 22nd, 1901, I found the mine in a good condition, well ventilated and watered.

On my fifth official visit to this mine, Nov. 14th and 15th, 1901, I was pleased to see everything working nicely and everything in good condition; also the satisfactory manner in which the new fan worked. I was also pleased to see that the mine superintendent made an effort to comply with my suggestions in regard to cutting down the amount of air in the mines, and also dividing the air proportionately in the splits. By doing this we are able to keep the mine safe. The more air we have in the mine, the more water and steam is needed, so I think it wise to keep the mine ventilated accordingly.

I have made several other visits to this mine in the year 1901, which I don't call official visits.

#### MINE NO. 4.

This mine is the property of the Pleasant Valley Coal Company and is situated about one-quarter of a mile north of No. 1 mine. The main entry is in a distance of two thousand feet with a parallel entry the entire length. The vein in this opening has an average thickness of fourteen feet. The output of coal for this mine in the year 1901 was 105,280 short tons. Number of days worked, 264; number of men employed, 98; number of fatal accidents, 2; non-fatal, 0; pounds of powder used, 76,960. Twenty-eight horses employed in the mine. This mine is artificially ventilated with a Capell exhaust fan, running at the rate of 200 revolutions per minute, producing 32,571 cubic feet per minute of pure air, which is distributed to all the working places in the

mine. This mine is equipped with an electric hoist, which drops the loaded cars to the mouth of the tunnel, from which point a gravity hoist conveys them to the bridge, a distance of 1,500 feet, the down cars, loaded, pulling up the empties. There are twelve miles of track, also fourteen miles of pipe line. Water system for sprinkling purposes. All the main entries are lighted by electricity. The plant which furnishes the power for all the Winter Quarters Mine is at No. 1.

On my first official visit to this mine, on Jan. 5th, 1901, the mine in general was in good condition, with plenty of air and well watered and kept damp. All working places were well timbered. Mine working full time.

On my second official visit to this mine, on Feb. 22nd, 1901, I went through all parts of the mine and found it in good condition. The mine had not been working since the strike that took place on Jan. 13th, 1901. On this date the miners asked for 10 cents more on the ton, and the day men asked for 20 cents more per day. As the company did not need the coal very badly, this mine did not start to work until the middle of March. On this date they went to work with 10 cents reduction in preference to working elsewhere.

On my third official visit to this mine, on May 6th, 1901, I found the mine in general in a fair condition, everything was well watered and all places well timbered. I was pleased to see that the management had made such great changes in compliance with the new law.

On my fourth official visit to this mine, on Aug. 22nd, 1901. On this date I found the mine in a good condition. Mine working full time. On Nov. 8th, 1901, I sent the mine superintendent a letter in regard to the air measurement of the month of October, in which I stated that there was too much air going in the mine, and instructed him to reduce the amount of air and increase the amount of water and steam, as at this time of year the atmosphere, being so dry, would naturally take more water and steam to keep the dust damp.

In regard to the accident in which Matt Salma was injured, and from the effects of which he died, I will say

the room in which the accident happened I found to be one of the safest rooms in the mine. The miners working nearest to him testified that fifteen minutes after the shot was fired he began to pull down some loose coal, while doing this a piece of coal, weighing about six or seven hundred pounds, fell from the top and struck him. It was, in my opinion, accidental. I suggested to the mine superintendent that he instruct the mine inspectors to be more careful in examining all places for loose rock and coal, especially where a man is working alone, and if the places are not in a safe condition, not to allow him to work there alone. The coal being so high and the room being so wide, a man should not be allowed to work alone if there is any possible doubt as to its safety. Hoping this suggestion will meet approval.

On my fifth official visit to this mine, on Nov. 14th, 1901, I was pleased to see everything in good condition, and mine working full time. I have made several other visits to this mine during the year, which I did not call official visits.

#### MINE NO. 5.

This mine is the property of the Pleasant Valley Coal Company, and is situated a little west of No. 1 mine, with a slope running south up the canyon. It is ventilated with a Gubai exhaust fan. This is a new mine. It has only worked 53 days during this year, employed 49 men and 2 horses. The output of this mine is 1,675 short tons. Powder used for the same was 530 pounds. No accidents. This mine has every indication of being a large one.

#### CLEAR CREEK MINE.

This property is owned and operated by the Pleasant Valley Coal Company and is situated seven miles up Mud Creek from the town of Scedoid. The output of this mine in the year 1901, was 245,586 short tons, at an average price per ton, loaded on cars, of \$1.17. Total number of days the mine worked was 295. Powder used in 1901, was 191,500 pounds. Average number of men

ployes during the year was 245. Number of horses was 36. Number of accidents, non-fatal 3, fatal 0.

The town itself, is located in a little park in the mountains and as the buildings are all new, of modern design and are arranged in order, the effect is indeed pleasing to the visitors. Near the entrance to this triangular park the Company has its cozy office, well appointed and equipped, the Wasatch Store Company, occupying a portion of the commodious structure, in addition the company has constructed twenty double houses and an equal number of cottages which are leased to employes at a reasonable rental. The Company has 250 men on its pay roll, 211 of which are employed under ground. The amount paid in wages amounting to about \$17,500.00 monthly. The output of first class coal being about 1,200 tons daily.

The Clear Creek Coal Mine is, it might be said, still in its infancy, having been worked for a period of only about two years and still it is one of the most promising properties owned by the Company. Since work begun in its development and operation, two entries with a parallel entry the whole distance, what is known in mining as a double entry system. The entries have been driven in on the vein, each of which is 2650 feet in length, one following the coal measure in an easterly direction and the other towards the south. At every 500 feet in the southern entry cross-cut entries are run, from which rooms are turned and similar cross-cut entries are run at every 700 feet from the East entry, the two main entries being connected by a cross-cut entry. The vein is 14 feet thick on an average and the coal is clean and first class in quality. The vein is almost horizontal, although irregular, having slight dips and upraises at intervals and yet maintaining as a general thing its horizontal plan. Portions of the main entries are illuminated by electricity. The coal being dropped to the dump from the mine by steam hoist. From the extreme interior workings the loaded cars are hauled to the hoist by horses.

In this work the Company employs 36 horses, all magnificent Clydesdales, weighing from 1,200 to 1,500 pounds each. These horses are most carefully cared for and are the pride of the camp. The miners work at

so much per ton for coal broken down and loaded into mine cars.

The machinery equipment of the Clear Creek Mine is of the best and is classified as follows: Three 80-horse power boilers, one 24-horse power engine, 1,100-volt alternating dynamo with 110-volt exciter, one 10x12 30-horse power air compressor, one 10x51 2x12 high pressure Worthington pump for sprinkling purposes in the mine, one No. 6 Knowles pump in the mine, driven by compressed air for pumping water out of the dip workings, one "Higerson-Sergeant" drill, and one "Schmucker" operated by air, one 10x14 duplex hoist for dropping loaded cars from the mine to the dump, one 10-foot ventilator fan and one 18-foot fan which produces 82,703 cubic feet of air per minute. The mine is daily inspected by the mine inspectors and every precaution is taken for the care and safety of its employees, although so far it is a perfectly safe mine in every respect. The main entries have a coal roof, the entire workings being a massive and solid body of coal of the best quality. Every convenience and facility exists for its economical and successful operation and the management and men take commendable pride in the showing being made by this comparatively new producer which is constantly increasing its output. This mine is under the management of Lured Crow as superintendent.

My first official visit to this mine, on Jan. 4th, 1901, on this visit I was not allowed to get off the railroad car on account of small pox in Salt Lake, where I came from. Under these conditions I sent for the mine superintendent and three of the miners. I questioned them in regard to the mine and condition of things in general. They recorded everything all right in and out of the mine and the mine working full time.

On my second visit of inspection on Feb. 25th and 26th, I went through every place in the mine and found it well watered and timbered with good ventilation, the mine working full time. The mine was idle a few days in January and February on account of a strike in the Warner & Rogers mines.

On my third official visit to this mine on May 10th, 1901, I found the new law had not been complied with regard to cross-cuts. I found several of the rooms a

little dry. In room 11, off fourth-right, I found a shot had misfired and the miner working that room had taken out the powder, which is contrary to the mining law, I also found a blow-out shot in the same room, I then instructed the mine foreman to see to this at once and be more careful in the future, as I do not want any risk run in handling powder. In regard to ventilation I found far more air in the mine than the law requires. All of the mine was well timbered and all but the parts mentioned above were well watered.

On my fourth visit of inspection to this mine on August 20th, 1901, I found the mine in a good condition, well ventilated, watered and timbered.

On my fifth visit, Nov. 13th, 1901, I found the mine in good condition. I was pleased to see that the mine superintendent had complied with my request on my last visit.

#### CASTLE GATE MINE.

The Castle Gate Mine is the property of the Pleasant Valley Coal company and is situated at Castle Gate Station, 108 miles south of Salt Lake City, in Carbon County, on the Rio Grande Western Railroad.

This mine is the largest mine in the state and has thirty miles of track in and out of the mine. The average number of men employed daily inside and outside was 480. Number of days mine worked in 1901 was 282. The output of this mine for this year was 337,319 short tons. Powder used in 1901 was 43,150 pounds. Number of horses and mules, 40. Number of accidents, fatal, 1.

This mine has a water pipe system reaching to every portion of the underground workings, and a number of men are constantly employed, whose duty it is to thoroughly water the mine in order to keep the dust in a constantly wet state. To make assurance doubly sure, steam jets are likewise introduced into the air currents in order that such out of the way corners and crevices and the abandoned workings not readily reached by the water system may receive moisture from this unfailing source, in addition to which the mine has a fan ventilator. By this two-fold protection more moisture is introduced into the mine than safety actually required, and for the reason that the law exacts from coal com-

panies powerful air currents and strong ventilations through all coal mines. In its passage through the main entries and rooms, the air naturally absorbs a great proportion of the moisture introduced in wetting down the dust. On this account a much greater amount of water than is necessary for sprinkling purposes must be used.

This mine is operated by three parallel entries 50 feet apart. The middle entry being used for car service in hauling coal out of the mine. These entries are 7,800 feet in length and follow the vein on an upraise of a pitch of seven degrees, with cross entries about every thousand feet, which is worked on a double entry system, with levels off these every 400 feet and with rooms every 70 feet of the levels.

There are five electric hoists, two of which drop the loaded cars down to the main entry, and three on the main entry, which drop the cars from one to the other until they are landed on the dump; mules being used in the upper workings, hauling cars of coal from the rooms to the entries.

The men work eight-hour shifts and are paid by the ton.

In mining the coal the undermining system is used, by which means the breaking of the coal into small pieces is largely avoided. Hercules powder is used in blasting, and from one to two hundred shots are fired daily. These shots are discharged by electric batteries from the outside of the mine at night when all are out of the mine.

All the main entries are lighted by electricity and connected with the company's office by telephone. The mine is inspected twice daily by inspectors who have a certificate from the state.

At Castle Gate the Pleasant Valley Coal Company has about 204 coke ovens, which are producing about 5,000 tons of coke monthly, the ovens being fed with slack from Sunnyside mines, which is bought from the Utah Fuel Company by the Pleasant Valley Coal Company. The machinery equipment is modern and up to date. The plant embraces seven large boilers for the generation of steam for the operation of the fan at the mine, which runs at a rate of 153 revolutions per minute and produces 100,225 cubic feet per minute of pure air.

which is made into four separate splits and distributed through all parts of the mine, and also furnishes steam to operate the big dynamos which furnish the electric power for the working of all the machinery in and around the mine.

The town has a population of 1,300 and supports three churches—Mormon, Methodist and Catholic; a school house and two hotels. The company has a fine large office, built of stone. It has also erected 65 cottages for the use of the employees, and a great many of the employees have built cottages of their own. This property is under the management of F. M. Cameron, as mine superintendent, who is at this date appointed general superintendent of the P. V. Coal Company and the Utah Fuel company.

On my first official visit to the Castle Gate Mine, on Jan. 10th, 1901, on the 10th, 11th, 12th and 13th, I went through all the mine. I found three inside rooms on the first level of 13 raise were a little worn, but all the rooms were damp. I found three standing shots in room 3, on the ninth level of 10 raise. The mine was well timbered and watered and had good ventilation and was clear from all gas. Mine working full time.

On my second official visit to this mine, on May 14th to 18th, 1901, I found said mine in a safe condition and the ventilation good. It was well watered all through and was perfectly damp and well timbered. The new law has been well complied with and is giving good satisfaction. I also made a visit to this mine on July 27th, 1901, and found the mine in good condition. This was my third visit. On my fourth official visit to this mine, on Aug. 25, 1901, I found the mine in generally good condition in regard to ventilation, watering and timbering. On this date I suggested that the management put in a telephone line from the outside, connected to the company's office, and the inside of the mine, with a station at each hoist, as I think this is necessary for the safety of the employees and the protection of the employer.

On my fifth official visit to this mine, on Oct. 9th to 12th, 1901, I found it, I am pleased to say, in a very good condition, the dust kept well watered and the timbering



good, and the ventilation excellent. In short, the mine was in a perfectly safe condition.

On my sixth official visit to this mine, on Dec. 3rd to 6th, 1901. On the first three days met as a board of examiners, and on the sixth I inspected the mine and found it in a good condition. Mine working full time.

### SUNNYSIDE MINES.

These mines are situated at Sunnyside 16 miles east of Mounds, in Whitmore Canyon, Carbon County, on the Sunnyside branch of the Rio Grande Western Railroad, connections being made at Mounds with the main line.

At this place the Company has opened up two mines, No. 1 mine being in the main canyon and No. 2 on the same vein in a side canyon about a half a mile southeast of No. 1. The vein of coal being about 7 to 7½ feet thick.

Sunnyside has a population of 1,500. Of this number the names of 450 appear on the pay roll of the company. To accommodate its employees, the Company has built 100 five and six room cottages, which are nicely furnished and painted, and which are equipped with electric lights and supplied with a water system. Many of the miners have built their own houses using plans furnished by the company, thus securing a uniform style of architecture.

Because of the care the Company has taken, the town of Sunnyside has a modern appearance and is free from shacks and shambles which have characterized the early coal camps of the west.

The town has one church building, one large well equipped school house with 200 children on the roll and a hospital, equal in its requirements for all necessities and furnishing the best of modern care and surgery.

The Company has a large and well appointed office and a commodious boarding house, the latter for the accommodation of single men, the price of board being 75 cents per day. The Wasatch Store Company has a large establishment here as well as at the other coal camps of the Company.

No. 1 mine is worked by a slope, following the coal measure on a ten per cent dip. From this slope levels

are turned at right angles. This slope has been run in on the vein for a distance of 2,000 feet and levels are turned every 400 feet, and cross entries are turned off these levels about 400 feet apart, and rooms are turned off these entries every 70 feet.

In the operation of No. 1 mine about 125 men are employed, mining machines are used in mining the coal. Horses are used for hauling coal from the rooms along the levels to the slopes. From there the coal is conveyed to the tibble by a steam hoist.

Total number of full days the mine worked in 1901 was 208. Total product of 1901, 79,061 short tons; pounds of powder used in 1901, 13,756; number of accidents, 5; 2 fatal and 3 non-fatal.

This mine is also artificially ventilated with a fan running at the rate of 46 revolutions per minute, producing 58,265 cubic feet of air per minute, and is distributed to all places in the mine.

My first official visit of inspection to this mine, on Jan. 31st, 1901, I went through every place in the mine and found everything in good order, mine working two shifts of men with two mining machines working night and day.

On my second visit to Sunnyside mine, on April 19th, 1901, I found the mine working full time with two shifts of men working. The ventilation was good, the mine was well watered and timbered. Everything was working all right under the new law.

On my third visit to this mine, in July, 1901, I found the mine in general in good condition.

On my fourth visit of inspection to the Sunnyside Mine No. 1, found everything in good condition. Mine working full time.

On my fifth visit of inspection on Oct. 5th, 1901. On Oct. 4th I received a message from the mine superintendent, stating that two men had been killed in No. 1 mine on the night of Oct. 3rd. Their names were Edward Hughes and James Cunningham. I arrived at the mine on Oct. 5th as this was the first train I could get there on. I at once proceeded to examine the part of the mine in which the accident occurred and found it to be in no way a dangerous place. There had been a shot

fired in the roof which did not bring all the loose rock down. Hughes and Cunningham with three other men had gone back after the shot had been fired and sounded the roof with a pick, thinking it was safe. Hughes and Cunningham proceeded to load a car of rock directly under the place where the shot had been fired, while thus engaged a portion of the rock fell, striking the two men and killing them instantly. The rock which fell on these men, as I found it, was thick in the center and thin on the edges. In my opinion the men did sound the rock, they sounded it in the thick part, which would make it sound quite solid, at the same time the rock may have been loose, made so by the shot they had just fired. Twenty minutes after the shot had been fired the rock fell. The condition of the mine was such that there could have been no bounce or squeeze to loosen said rock in twenty minutes, so in my opinion there was a mistake made in rushing back to work under this rock immediately after the shot had been fired. We often find this mistake made where contract work is being done. I suggested to the management that when the mine foreman has cause to put four or five men to work in one place at any one time, he put a competent man in charge of the work. By doing this many accidents can be avoided. I think this one like many others is carelessness on the part of the employee. On this visit I find the Sunnyside mine in general in good condition.

I made several other visits during the year which I have not mentioned.

The output of No. 2 mine for 1901, was 212,171 short tons, number of days worked in 1901, was 280, number of men employed was 313, number of fatal accidents 2, number of non-fatal 2, and number of pounds of powder used was 310,525.

This mine is artificially ventilated with a fan running at the rate of 56 revolutions per minute, producing 43,125 cubic feet of air per minute, which is distributed to all the working places in the mine and also a water system through the entire mine, which is used for sprinkling purposes to keep the mine constantly damp. The main entry is in a distance of 3,200 feet and its rise entries are pushing forward night and day. The rise entries of No. 2 mine are equipped for haulage with elec-

tric hoists. Coal is delivered by mules on the dump. This method will soon be superceded by electric locomotive.

On my first official visit of inspection to Sunnyside mine, Jan. 30th, 1901, I went through every place in No. 2 mine and found all the places well watered, timbered and ventilated. On this visit I suggested that every place be well watered before firing any shots. There was two mining machines working on this date. They had taken off two for a few days as the water was short for sprinkling purposes. The mine was working full time.

On my second visit of inspection on April 17th to 20th, 1901, I found the Sunnyside mine No. 2 working full time with two shifts of men. The ventilation was good, the mine was well watered, every place was damp and the timbering was in good condition. Everything working all right under the new law.

On my third visit to this mine in July, 1901, I found the Sunnyside mine in a good condition.

August 16th, 1901. On this official visit I found No. 2 mine in a good condition, well timbered and watered, with good ventilation. Mine working full time.

In regard to the accident in which Benjamin Price was killed. I took all the evidence available and examined the seat of the accident and in my opinion it was purely accidental.

On Oct. 6th, 1901. On my official visit of inspection to No. 2 mine, I found the same in general in a good condition.

### WASATCH MINE.

The Wasatch Mine is situated in the Coalville-Grass Creek district, in Summit County, on a spur of the Echo & Park City branch of the Union Pacific Railroad, and about three miles east of Coalville. This mine is owned by the Weber Coal Company of Salt Lake City, and is under the management of T. J. Lewis as superintendent. The equipment of this mine consists of four large steam boilers, one double hoisting engine for hauling the coal out of the mine, one ten-foot fan, three large pumps for pumping the water out of the mine. The

main slope is down a distance of 1,000 feet, of which 300 feet has been sunk this year through a hard, fine body of coal. The coal which has been taken out of this mine during the year 1901 has been taken out of the pillars. The coal that is taken out of the pillars is not as good as the coal taken out of the solid, which has been a great drawback to the management. Most of the pillars are worked out and the most of the mining is now done in the solid, which will be a great improvement in the quality of the coal.

The output of this mine for the year 1901 was 26,751 short tons, at an average price per ton of \$1.41. Total value of product, \$35,835.00; total number of full days the mine worked was 208; pounds of powder used was 1,500. The average number of employes during the year was 40. Number of horses was 9. Number of accidents, fatal 0, non-fatal 2.

The output mentioned above did not include slack and other small coals.

On my first official visit of inspection to this mine, on March 22nd, 1901, I found the mine working full time, employing 50 men, inside and out. I examined all places in the mine and found it well timbered, but a little warm in places, with a fair current of air. On this visit I gave instructions in regards to the new law. I found the mine a little dry and dusty on the third level, and I suggested to the management to put in a steam jet.

On my second official visit to this mine, on June 3rd, 1901, I found the mine working four days a week. The air was not as good as it should have been. The mine was well timbered. I suggested to the management that they put in a new fan, as the artificial means that they now use was not sufficient.

On my third official visit to this mine, on Aug. 30th, 1901, I found things in general in a good condition.

On my fourth official visit to this mine, on Nov. 20th, 1901, I also found the mine in a fairly good condition. Was pleased to see the management had complied with my suggestions in regards to fan, which was nearly completed. When same is in working order it will make a wonderful improvement in the mine. I have made other

visits to this mine during the year, which I did not call special visits.

### GRASS CREEK MINE.

The Grass Creek Mine is owned and operated by the Grass Creek Coal Company of Salt Lake City and is situated on the Grass Creek Terminal Railroad, a branch of the Echo & Park City Railroad, nine miles southeast of Echo.

The equipment of this mine consists of two steam boilers, one small double engine, which is used for lowering the coal from the upper part of the workings; one small engine, which is used for shaking screens; one ten-foot fan, which produces 11,198 cubic feet of air per minute. The output of this mine for the year 1901 was 28,498 short tons; average price per ton, \$1.50; total selling value of product, \$42,338.08; total number of full days the mine worked was 250; pounds of powder used was 11,250; average number of employees during the year was 55; number of horses used in the mine was 6; accidents, none. The vein in this mine is twelve feet thick of clean coal. The mine is under the management of W. L. Hanson, as superintendent.

On my first official visit to this mine, on March 23rd, 1901, I found the mine in general in good condition, with plenty of air and well timbered, working from four to five days a week. On this visit I instructed the superintendent in regards to the new law.

On my second official visit to this mine, on June 5th, 1901, I found the ventilation was good, with a small number of men in the mine. I inspected the air-way leading to the fan and found it to be too small to work a very few men at a time. I instructed the mine superintendent to make the air-way leading to the fan larger in order to relieve the fan and increase the amount of air in the mine.

On my third official visit of inspection to this mine, on Aug. 28th, 1901, I found the mine well ventilated, considering the number of men employed. The timbering in places was not as good as it should be. In several of the rooms the props were too far apart, which in my estimation would make the rooms unsafe. I sug-

gested that the mine superintendent instruct the miners and get them to put the props no further apart than six feet along the side of the track, and also a row between that and the rib. I also suggested that he timber the main entry at the first fault, which I regarded as being unsafe. On my inspection in and around the fan I found that my instructions on my last visit had not been carried out. I also called his attention to the new mining laws of 1901, which he had not complied with.

On Oct. 11th, 1901, I wrote the mine superintendent a letter in regard to my visit of Aug. 28th. In my letter I stated to him that in order to comply with the law, you must make some improvements in regard to the airway leading to the fan and timbering in the mine, and also to put an iron door at the mouth of the tunnel and part of the building between the mouth of the tunnel and the dump. Now, I gave you thirty days in which to make these improvements, the time being up last Monday, Oct. 5th, and if on that date these improvements and changes were not completed, you are unlawfully running your mine and holding yourself liable to a fine of from \$100.00 to \$500.00.

Please read Section 11 of mining law of 1901.

Yours very respectfully

GOMER THOMAS,  
State Coal Mine Inspector.

On my fourth official visit to this mine, on Nov. 21st, 1901, I found the Grass Creek Mine in general in a good condition and several of my previous suggestions had been complied with. The iron door at the mouth of the tunnel had been put in, the timbering of the mine had been done and the airway leading to the fan was about to be completed.

I have made other visits to this mine during the year 1901.

#### THOMAS MINE.

The Thomas Mine is owned and operated by the Sterling Coal & Coke Company of Salt Lake City and is situated some two miles east of the town of Sterling on the terminus of the Sanpete Railroad.

The main tunnel is driven across the measures through the sand formation, a distance of 2,700 feet. The thickness of the vein on the north side of the tunnel is three feet thick and on the south four and one-half feet. The production of this mine for 1901 was 1,885 tons. Total number of days worked was 300. Number of employees was 6. Accidents, non-fatal 1, fatal 0. Number of pounds of powder used 500. Number of horses 1.

This mine is ventilated by natural ventilation. I made four visits to this mine during 1901 and found it in good condition, with good ventilation, well timbered and was kept damp by natural sources.

#### EDMONDS MINE.

The Edmonds Mine is owned by the Manti Coal Company of Manti, and is operated by Jacob Johnson, who has a lease on same, who has abandoned the old opening and is now taking coal out through the Sterling Coal & Coke Company's tunnel, as the Sterling Coal & Coke Company owns all the coal north of the tunnel and the Manti Coal Company of the south. Now the both companies take their coal out through the one tunnel. I made several visits to this mine during 1901, but on my last visit to this property on Dec. 11th, 1901, I found eight men working in the mine and with a very little air, not near enough to keep the mine in a safe and healthy condition. The mine foreman did not hold a certificate of competency as required by the mining laws of Utah. On the 13th day of December, I notified the management of the condition of the mine in regard to ventilation and escapement way and also in regard to the mine foreman who did not hold a certificate, and if he continued to work under the above condition he would lay himself liable to the law, as in my opinion the mine was not safe.

This mine is ventilated by natural ventilation. The output of this mine for 1901 was 700 short tons, the average number of men employed during the year 1901 was 6.

#### ABERDEEN MINE.

The Aberdeen Mine is owned and operated by Whitmore & Ballinger, of Price, Carbon County, Utah, and,



situated eight miles northeast of Price. The vein that is worked in this mine is 20 feet thick of clean coal and is of good steaming and domestic qualities. The output of this mine for the year 1901, was 500 short tons, number of men employed 3.

#### THE MILNER & GILSON MINE.

This mine is situated some twelve miles northeast of Price and is under the management of Sam Gilson. There are several openings on this property and are now making a test of the coal for coke with a small coke oven, so far they have produced a very fair quality of coke. The management is more than confident that they will be able to demonstrate that their mines are capable of producing coke that can be put in competition with the Colorado and Utah and Connelville articles.

#### HUNTINGTON MINE.

This mine is owned by a New York Company and is worked under a lease by S. J. Harkness. It is situated some 13 miles east of Fairview. The production of this mine during the year 1901 was 700 short tons. Number of days worked was 150, number of men employed was 2.

#### DESERET MINE.

This mine is owned and operated by the Deseret Coal & Coke Company of Manti. It is situated on Huntington Creek a little east of the Huntington Mine.

#### CEDAR CREEK MINE.

The Cedar Creek Mine is situated on Cedar Creek, about 10 miles northeast of Huntington, Emery County, Utah and is owned and operated by the Cedar Creek Coal & Coke Company, with William Howard as Superintendent. The coal from this property is sold to local trade in Castle Valley and has good steam, domestic and coking qualities.

On my official visit to this property on April 4th, 1901, I found the mine in a good condition. The main entry was driven 175 feet, with 14 feet of clean coal.

This mine has the indications of becoming a large producer, as it is situated only ten miles from the coming railroad which has been surveyed through Castle Valley by the R. G. W. R. R. Company. This mine works about three months in the year. It produced 300 short tons in 1901, number of days worked 80, number of men employed was 2.

#### BEAR CANYON MINES.

These mines are situated 13 miles north of the town of Huntington, on Huntington Creek, also three miles further up the creek is the Trail Canyon Mine. There are two veins on these properties, one 8 feet and one 11 all clean coal, owned and operated by Don Robinson of Huntington, Emery County. I visited these mines on April 5th, 1901.

#### CASTLE VALLEY MINE.

I visited this mine on April 7th, 1901. This mine is 14 miles northwest of Castle Dale and has seven and one-half feet of good clean coal and owned and operated by A. M. Johnson. The output of this mine for 1901 was 500 short tons. Total number of full days worked was 180, number of men employed was 2. The coal is sold to local trade in Castle Valley.

#### FERRON MINE.

My visit to this property on April 8th, 1901. This mine is some 14 miles northwest of the town of Ferron. There are two tunnels on this property; one is on an eight-foot vein and one on a five-foot vein all good coal. This property is owned by the Ferron Coal Company, with W. S. Hinke as Superintendent.

I visited other small mines in the valley as follows: Mud Creek Mine, some twelve and one-half miles northwest of the town of Emery and Queatch-up-pah Creek about ten miles from the town of Emery, to the northwest. The vein on this property is about 15 feet thick. There has been a great fire in this canyon which has caused some of the coal to burn and some of it charred, which makes appearance of it almost look like Anthracite coal and other parts of it looks like natural coke,

but it has all been made by the action of the fire. This property is owned by Sam Williams of Emery and a Salt Lake party, I also visited the mines in the valley south of Emery from five to fifteen miles. These coal measures are about 2,000 feet lower than the coal measures on the west side of the valley, with several veins from four to forty feet thick. This coal is not as good a quality as the coal on the west side of the valley. On April 13th, 1901, I visited the Convulsion Creek Mine. This mine is ten miles west of Emery. The coal here is about the same as the rest of Castle Valley coal.

In my opinion, the coal fields in Castle Valley which I visited on this trip are one of the largest in the west and are equal in quality.

#### CARBONDALE MINE.

This mine is owned and operated by the Carbondale Coal Company, and is situated at Hales, six miles north of Scofield. All of this coal has good steam and coking qualities.

#### ANALYSES OF COAL FROM DIFFERENT MINES IN THE STATE.

Winter Quarters Mine.—Water, 3.33 per cent; volatile, 42.67 per cent; fixed carbon, 49.06 per cent; ash, 4.94 per cent. Total, 100 per cent.

Sterling Mine.—Water, 5.67 per cent; volatile matter, 39.24 per cent; fixed carbon, 49.79 per cent; ash, 5.30 per cent. Total, 100 per cent.

Castle Gate Mine.—Water, 1.50 per cent; volatile matter, 44.62 per cent; fixed carbon, 50.22 per cent; ash, 3.20 per cent.

Huntington Mine.—Water, 1.51 per cent; volatile matter, 43.52 per cent; fixed carbon, 51.31 per cent; ash, 3.21 per cent; sulphur, 0.45 per cent. Total, 100 per cent.

Sunnyside Mine.—Water, 1.68 per cent; volatile matter, 36.14 per cent; fixed carbon, 57.88 per cent; ash, 4.30 per cent. Total, 100 per cent.

Wasatch Mine, Coalville.—Water, 8.38 per cent; volatile matter, 46.89 per cent; fixed carbon, 40.45 per cent; ash, 3.33 per cent.

Clear Creek Mine.—Water, 3.42 per cent; volatile

matter, 43.56 per cent; fixed carbon, 48.38 per cent; ash, 4.64 per cent. Total, 100 per cent.

Grass Creek Mine, Coalville.—Water, 7.28 per cent; volatile matter, 45.79 per cent; fixed carbon, 43.25 per cent; ash, 3.45 per cent; sulphur, 0.23 per cent. Total, 100 per cent.

Castle Valley Mines.—Water, 1.85 per cent; volatile matter, 36.01 per cent; fixed carbon, 56.61 per cent; ash, 4.95 per cent; sulphur, 0.58 per cent. Total, 100 per cent.

Iron County.—Water, 3.00 per cent; volatile matter, 44.41 per cent; fixed carbon, 42.47 per cent; ash, 10.12 per cent. Total, 100 per cent.

### THE HYDROCARBONS.

Theory and Revelation of Some of Utah's Resources.

The genesis of the hydrocarbon world in Uinta Basin is known in areal geology, up to date, by the "testimony of the rocks."

The unwritten history and the material resources that have come to surface and light, so far, are unfolding to the miner and investigator valuable products and information.

This is so.

In this most interesting region much more has to be learned.

This we know.

That will be in future development and exploration. Deep wells and shafts in the basin will follow and solve the problems.

Nevertheless, now there are many complicated propositions to study or theorize in more than economic mineralogy and vein phenomena in that vicinity.

Particularly is it so in the genetic relations in the formation of shales, coals, petroleum and various asphaltic products known and developed throughout.

The areal and structural geology, the origin of gilsonite, grahamite, wurtzelite, and the occurrence of related hydrocarbons in this region are matters of much interest.

To make the subject more intelligible, we respectfully refer to the synclinal section herein.

These sections are projections of the monoclinical

Book Cliff mountains at the Mammoth Paraffin mine in Whitmore Canyon, heretofore published.

The initial station being on the southern rim of lines running north and northeasterly across the Uinta Basin, the terminations rest upon the flanks of the Uinta mountains, which is upon the northerly rim, illustrating in a measure the actual condition in this synclinal region.

From personal investigation in the vicinity and north of the Mammoth Paraffin mine, we base the source of uinitate or gilsonite and allied hydrocarbons in the exudation of maltha or capapote from the lower measures of sand asphaltum.

In one instance the geological horizon in the saturated sandstone and limestone of the Green River group of the tertiary, a crevice is filled with gum or a viscous compound, the fracture being in both sand and lime asphaltic rocks. It is a vertical vein, extending from the surface in a gorge downward to the great mass of capapote beneath. The distinguishing feature is that it is both tasteless and odorless, unless fused, and can be used as a chewing gum and can be cut out of the vein with an ax or knife. This being an intermediate it is so far without classification, unless we call it "chewing gum." In other instances in our observations in various localities, viz., upon the Mammoth Paraffin mine and immediate vicinity, on the Salt Lake Asphaltum Company's claims and on "Nine Mile" and "Emma Park" region, wherever there is an expose of sand rock and asphalt, trickling springs of maltha or mineral tar, flow out of the crevices. Some of these crevices are in slight displacements and generally in the vicinity of springs of water.

As to the origin or course of the crevices or veins filled with uinitate, gilsonite, wurtzelite, etc., we would not undertake to state, but lean toward the theory advanced by Mr. George H. Eldridge in his report of 1896, U. S. Geological Survey, which is as follows:

"They may have been produced in the gentle folding that took place in the formation of the Uinta Basin synclinal, the strata being torn asunder from below upward, instead of as in an anticlinal from above downward."

If this is correct, the cracks may extend to a considerable depth, perhaps several thousand feet, and would have a tendency to widen in their descent at least for a distance, unless occupied by rock masses squeezed in from the side.

As to the origin and source of uintaite or gilsonite, wurtzelite, etc., hard, raw hydrocarbons impregnating the veins mentioned above, a reasonable conclusion is that a semi-fluid or viscous mass generated in the great sandstone asphaltic rock or saturated oil sands, under heavy pressure, were forced upward, gradually becoming hardened and solidifying nearer the surface. These strata being the upper "Green River," "Bridger" and "Uinta Group" of the tertiary formation, the greatest number of veins break through and outcrop in the synclinal or "Uinta Basin."

This in the hydro-carbon vein phenomena is strongly supported by Dr. Henry Wurtz of West Virginia in the examination of a vein of grahamite in that state which is as follows:

"The general aspect of the mass, as well as all the results of a minute examination of the accompanying phenomena, lead irresistibly to the conclusion that we have here a fissure which has been filled by an exudation, in a pasty condition, of a resinoid substance, derived from or formed by some metamorphosis of unknown fossil matter contained in deep seated strata intersected by a fissure or dike. It is not necessary to suppose a degree of fluidity greater than that of semi-fused pitch or inspissated tar. Such soft doughy mass, though flowing but slowly would in time be forced, by a very moderate pressure, into every crevice of the fissure."

In support also of the conditions of impregnation of the Uinta Basin veins, we again refer to Mr. George H. Eldridge in his report of 1896:

"The condition in which the gilsonite found its way into the veins seems most probably to have been that of a plastic mass, coming from below under pressure, and, although of high viscosity, sufficiently fluid to be pressed between the grains constituting wall rocks, whether of sandstone, shale or limestone, etc., etc."

We also refer to another authority, Professor S. C.

White, also of West Virginia, as to the origin of asphalt and grahamite:

"It is simply the residuum of petroleum. The fissure extends down through underlying oil sands, and when the cracks were opened petroleum oozed up and the tarry matters in solution finally plugged up the exit, just as they will do in an oil well if not interfered with by the torpedo man."

Nature has indeed been generous in the distribution of the varied resources of hydro-carbons outcropping from the Mammoth Paraffin mines, and throughout the Uinta Basin.

Both in vein and contact phenomena the exposed bitumons practically prove quantity and quality.

In many instances the surface outcrops are so extensive and pronounced as to assure (without exploration) inexhaustible raw products.

At the Mammoth Paraffin mines in Whitmore Canyon, near Sunnyside, the measurement of the lower bituminous rock stratum is eighty-two (82) feet in thickness above and in conformity five other measures have exposed from eight to forty feet in thickness.

By a series of open cuts and quarry system hundreds of feet along these ledges or blanket veins show a continuity that is unquestionable and whose cubic contents are incalculably great.

Another instance of quantity exists in the "Cow Boy" and Big Bonanza group belonging to vein phenomena.

From extracts from Mr. George H. Eldridge's report in the Seventeenth Annual U. S. Geological Survey in 1896, page 944, an estimate of the tonnage of gilsonite may be formed from the following:

"The 'Cow Boy' vein, which is the larger, and for at least two to five miles it can be traced, has an average width of twelve feet, for a half mile attaining sixteen or eighteen feet, etc."

The Big or East Bonanza, for that portion north of White River fully three miles, maintains a general width of ten feet.

There are other veins mentioned, viz. The "Dunesne," the "Black Dragon," and the "Culmer," that

show upon the surface great outcroppings of gilsonite also.

We refer also to the eminent authorities: Dana, Hitchcock and Dr. J. P. Kimball.

The letter we particularly refer to in his description of a vein on the Tanalul ranch, near the Cristo Hansteca, Mexico. We extract as follows:

"The sandstone formation is the source of a number of deposits of capapote or asphaltum."—

Hence, this formation, from its nature, otherwise, impervious because the permanent receptacle of maltha is asphaltic petroleum is oozing from the sandstones below; and probably the more freely under a hydrostatic pressure, and the action of the water is strikingly suggested by the configuration here observed of a stratigraphical basin bordered by elevated plateaus."

The inspissation of maltha or pit asphalt, and even petroleum to grahamite and other mineral bitumens, by the loss of hydrogen and the addition of oxygen, is a well known occurrence which may be artificially illustrated in the laboratory.

In the evidence we have here, together in support of like conditions, elsewhere we base a firm belief in the asphalt saturated sandstones being the permanent receptacle of not only maltha but also that great reservoir of oils will be developed in localities where no displacements exist throughout the Uinta Basin.

#### ANALYSIS OF SAND ASPHALT. NO. 1.

Moisture . . . . .	.10 per cent
Petrolene . . . . .	6.50 per cent
Aspheltone . . . . .	3.89 per cent
Aspheltum . . . . .	10.45 per cent
Organic, not asphalt . . . . .	.67 per cent
Mineral matter . . . . .	88.72 per cent

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100.00

Specific gravity, compared with water.. 2.10 per cent

Weight of one cubic foot, 131 pounds.

The petrolene is the liquid portion of all asphaltum.

The asphaltene is the solid portion of asphaltum.



The mineral matter is a nearly pure white silicious sand consisting of small angular grains.

The excess of petrolene over asphaltene gives plasticity to the mixture.

#### ANALYSIS OF SAND ASPHALT. NO. 2.

Moisture .....	.15 per cent
Petrolene .....	6.56 per cent
Aspheltene .....	3.89 per cent
	<hr/>
	10.45 per cent

#### ANALYSIS OF SAND ASPHALT AND HYDROCARBON MINERALS. NO. 3.

Moisture ....	.21 per cent
Potrolum .....	8.41 per cent
Asphaltene .....	2.77 per cent
	<hr/>
	11.18 per cent

#### NO. 4.

The specimens of No. 1 gilsonite is practically pure asphaltum. The result qualitative of asphalt in the

No. 5 Gilsonite is .....	99.75 per cent
No. 6 Gilsonite and sand residue is 49 to .....	55.96 per cent
No. 7, Gilsonite sandstone wall is.....	25.00 per cent
No. 8 Gilsonite, Sand-asphalt, "Capapote" foundation is .....	16.00 per cent

The mineral residue, so Nos. 2 and 3 specimens are principally silicious sand.

The following is taken from the Tribune Oil Pamphlet:

#### DEVELOPMENT HAS COMMENCED.

The development in several counties has passed the experimental stage, and oil in limited quantities has been struck at a reasonable depth. While the state is still yielding millions in metallic wealth from her mountain ranges, the best experts in the country confidently believe that there lie underneath their lower slopes and the valleys deposits of oil which can be reached and

marketed at an outlay small in comparison with the profits to be accrued.

At all points where boring is going on, the drills have passed through sand yielding an excellent quality of oil and promising more with the attainment of depth. Capitalists experienced in oil production all over the country have recognized the promise of the Utah fields and are investing their means liberally in oil lands and development work.

At present the development is practically upon the border of the immense field, one well being drilled at Dairy Fork, about seventy miles south of Salt Lake; another eighteen miles south of Colton; a third in the San Rafael country, sixty miles south of Price, and a fourth just over the Utah line, in Rio Blanco county, Colorado. When these wells have proven their capacities, which seems inevitable, the development of the immense intermediate territory will be resistless.

### GREEN RIVER OIL FIELDS.

#### Vast Acreage Controlled by Numerous Companies.

The Green River oil fields are situated in the Green River valley, in Grand and Emery Counties, Utah, on the Rio Grande Western Railway, 186 miles southeast of Salt Lake.

The whole valley is made by erosion from wind and water, and the removal of the tertiary and superficial deposits, down to the cretaceous, leaving a valley thirty miles wide by seventy or eighty miles long. The surface consists of low plateaus and deeper valleys. Traversing this great valley from southeasterly to northwesterly are two distinct anticlinal uplifts. There are vast areas of the surface where the lower members of the tertiary are left in thin sheets or caps, to plateaus from 200 to 300 feet high, while the surrounding valleys, washes, creek bottoms and river valleys lie wholly in the upper cretaceous. The erosions expose the blue shales of the cretaceous at all points where sufficient erosion has occurred to remove the tertiary formations. The oil found in seepages in these anticlines belong to the paraffine family, and is, therefore, much more valuable than

the oil obtained in the tertiary formations of California and Texas.

#### COMPANIES INTERESTED.

Among the companies interested in this district are the California-Utah Oil Company, the Arizona-Utah Paraffine Oil Company, the Peerless Oil Company, the Sunday Morning Oil Company, the San Rafael Oil Company, the Duchesne Oil Company, the Home Lubricating Oil Company, the Green River Oil Company, the Chicago Oil Company and the Utah Lubricating Oil Company.

J. R. Walker and associates of Salt Lake control about 20,000 acres of land in this district, and W. J. Berry, representing California capitalists, controls 12,800 acres. Among the large individual holders are Senator Thomas Kearns of Utah, Senator C. D. Clark of Wyoming, W. E. Jamison of Pittsburg, William Bordisi of New York, John T. Beebe of Chicago, H. A. Orth of Lafayette, Ind., and George W. Heintz and W. W. Rivers of Salt Lake.

#### SAN RAFAEL WELL DEEPEST.

The San Rafael Oil Company was incorporated on June 6, 1901, under the laws of Utah, with a capital of 500,000 shares, of the par value of 25 cents. The officers are: A. J. Lee, president; Thomas Nichols, vice-president; W. H. Clark, secretary and treasurer; A. J. Davis, director and manager. This company has acquired the ownership of 2,000 acres of land lying in the southeastern part of Emery County, Utah, sixty miles from Price, Utah. Work was started on the property immediately after the incorporation, and up to the present time about \$23,000 has been expended in machinery and development work. A ten-inch well has been drilled to a depth of 1240 feet. The drill has passed through two strata of oil-bearing sand, one at a depth of 405 feet and another at a depth of 657 feet. The second sand produced enough oil to make it a paying proposition, but this being a test well, it was deemed advisable to drill for the third oil sand, which it is believed will be encountered at a depth of 1300 feet. The formations already passed through have been very regular, the shales

and sands being identical with those found in the Oil City fields of Pennsylvania. The quality of the oil is the highest grade of lubricating oil, being 78 per cent pure paraffine. The company is using a forty-horse-power boiler and engine, manufactured expressly for its use. There are eight oil springs on the property of the company, from which oil flows from the surface.

### THE CALIFORNIA-UTAH CO.

**Has the First Rig in the Green River Field.**

The California-Utah Oil Company was incorporated under the laws of Utah on June 11, 1901, with a capital of 24,000 shares, of the par value of \$1. The officers are: C. M. Kilbourn, president; Walter Scott, vice-president; W. I. Roberts, secretary and treasurer; D. C. Robbins, general manager. Principal office, Salt Lake City. This company, backed largely by California capital, controls about 60,000 acres of land in Emery and Carbon counties, mostly in the former county, situated in the vicinity of Green River station. Machinery, derricks and necessary buildings have recently been put on the ground and drilling will soon begin. The first well will be drilled at a point eight miles southwest of Green River station. The company owns a standard rig, has let a contract for 2,000 feet of boring and is prepared to go 3,000 feet, if necessary, in order to strike oil. This well will be only seven miles from the old Garn oil well, which was put down several years ago, and good oil indications found. The California-Utah Company has, in addition to this work, just let a contract to F. H. Mitchell of California to bore a well on the ground of the company within four miles of Woodside, Utah. Mr. Mitchell will use a standard rig, with a capacity to drill to a depth of 4,500 feet.

### SHALLOW WELLS ENCOURAGING.

**Uintah Company Strikes Oil Not Far From Colton.**

The Uintah Oil Company was incorporated under the laws of Utah in June, 1901, with a capital of 1,000,000 shares, of the par value of \$1. The officers are: C. B. Stewart, president; J. T. Kingsbury, vice-president; M. F. Eakle, secretary; W. S. Romney, treasurer. Prin-

capital office, Salt Lake City. This company is operating in the Colton district and controls 2,000 acres of land in Wasatch County, twelve miles south of Colton. Two wells have been put down upon the property. The first well struck a stratum of oil sand at 180 feet, which produced oil estimated to be at the rate of from five to ten barrels per day. It was thought this well would prove profitable when shot, and consequently the machinery was moved 600 feet south and another well started. In the second well the drill passed through limestone and oil sands at different depths. Some oil was struck at 375 feet, but the company stopped boring for the purpose of getting more improved machinery for sinking deeper.

Further development work will begin early in the year. C. B. Stewart and associates control 2,000 acres of land just east of the company's holdings.

Among the large individual holders of land in the Colton district are M. L. Effinger, George M. Dever, W. W. Rivers and R. J. Evans.

### PIONEERS IN SEARCH FOR OIL.

The pioneers in the search for oil in the Green River district were W. G. Hall and W. H. Bancroft of Salt Lake, who, with their associates, about fifteen years ago located fifteen sections of land on Green River, about four miles below the crossing of the Rio Grande Western Railway. Their attention was directed to this spot by oil which was seeping out through the crevices in the rocks. Preparations were made for development at that time, but for some reason no work was done. About ten years later some of the same parties originally interested relocated the land and put down a shaft about fifty feet. The country in the vicinity of the shaft is broken, the fractures in the rocks being principally from east to west, and the country to the south has been thrown down vertically about 250 feet. Passing from the base of the break half a mile in a southerly direction, the country is practically level, and rises again to an elevation of fifty or sixty feet to the second level.

At the base of the break of the formation, and a mile from the river on the east side, oil comes from the surface in three or four places within a radius of 200 feet.

The oil is of a dark brown color and is pronounced by experts to be a first-class lubricating oil. Some of it has been refined and produced good heavy white headlight oil. In the old shaft that was sunk water has seeped in through the rocks and the oil has accumulated on the water to a depth of twelve inches.

#### THE WALKER HOLDINGS.

J. Rob. Walker and his brother, together with some other capitalists, have acquired thirty sections of land south, southwest and southeast of Green River station, and numerous eastern and California experts speak highly of the property. No corporation has yet been formed, but negotiations are in progress looking to a thorough development of the field.

#### UTAH UNION COMPANY.

The Utah Oil and Development Company has located 5,400 acres of selected lands in the favored district between Dairy Fork and White River. In the first named locality their holdings adjoin those upon which the White Star Company has struck oil. Near Tucker several gas springs and bitumens in the rock crevices indicate the presence of oil. At White River the holdings are in close relation to the immense lodges of oil shale. The company is incorporated with a capital stock of \$50,000, divided into 500,000 ten-cent shares. J. J. Trenam is president; Edward W. Clark, vice-president and manager; Frank R. Ball, treasurer; S. L. Hague, secretary, and John Cain, W. H. Hackney and Homer Robinson, directors.

The Red Ridge Oil Company's holdings consist of 1,600 acres on Diamond Creek, in the neighborhood of the Thistle asphalt deposits, and 1,600 acres eight miles southeast of Juab City, adjoining the land upon which the Juab Oil and Coal Company found oil in the small hole drilled years ago to prospect the shale beds. The office of the company is in Salt Lake, and it is incorporated with a capital stock of \$50,000, divided into 500,000 shares. E. V. Higgins is president; Edward W. Clark, vice-president and manager; S. L. Hague, secre-

tary; Frank R. Ball, treasurer, and J. J. Trenam, W. H. Hackney and John Cain, directors. Development will be started next year.

### WHITE STAR IS DRILLING.

#### Favorable Indications in Well on Dairy Fork, Utah.

The White Star Oil Company was incorporated under the laws of Utah in January, 1901, with a capital of \$25,000. The officers are: A. H. Tarbet, president; George E. Blair, vice-president and manager; W. G. Crawford, secretary; H. J. Wallace, treasurer. Principal office, Salt Lake City.

The holdings of the company are in Dairy Fork canyon, about ten miles south of Mill Fork siding, on the Rio Grande Western Railway.

Manager George E. Blair furnishes the following information relative to the development work of the company: "A well has been drilled to the depth of 393½ feet. The formation passed through so far has been as follows. Soil, 19 feet; sand rock, 4 feet; blue shale, 25 feet; blue clay, 20 feet; sand rock, 10 feet; shale impregnated with oil, 2 feet; blue clay 30 feet; quicksand, 25 feet; sand rock, 6 feet; blue shale, 32 feet; blue clay, 32 feet; sand rock, 6 feet; blue clay, 60 feet; oil sand shale, 18 feet; sand rock, 4 feet; blue shale, 34 feet; lime rock, 30 feet; blue clay, 10 feet; oil stratum, 1½ feet; blue shale, 25 feet; blue clay, 22 feet; oil stratum, 6 feet."

At a depth of 290 feet the sand encountered contained oil, which had an estimated flow of two-thirds of a barrel per hour. At 368 feet an oil stratum was struck which flowed an amber-colored oil of a high grade.

Another oil stratum was struck at a lower depth, which flowed freely. The upper strata of oil-bearing sand has been cased off and the well is still going down at the rate of seventeen feet per day.

### SAN JUAN HAS MUCH OIL.

The property of the San Juan Oil company is situated along and adjacent to the San Juan river in the San Juan county, in the southeastern portion of Utah. It consists of fourteen quarter sections of land, upon

ten quarter sections of which oil of the finest quality for illuminating and lubricating purposes has been discovered. It is situated about forty miles west of Bluff City, the old county seat of San Juan county.

The stratification lies almost horizontal, and apparently for a distance of forty miles up and down the stream has not been disturbed by uplifting, and there is no fissuring or fracturing of the strata discoverable, so far as known, along this stretch of country. There would seem to be a very moderate dip not to exceed 5 degrees, however, but the axis of the anticline must be much further west than Bluff City. It is in Mesa county, and has been very greatly eroded, immense gorges and canyons being cut through the sandstone, limestone and shales, the banks of which stand, like many places of the Grand Canyon of the Colorado, almost perpendicular, and varying in height from the surface of the stream from 300 to 1,000 feet. The stratification is thus exposed and may be seen and read as distinctly by the geologists as if a log-book had been kept. The stratification along the stream consists of highly fossiliferous limestone, gray and red sandstone and shale. When a certain sandstone horizon is reached which is overlaid by a bed of petrified or fossilized seaweed and shell fish, you invariably find the oil. This stratum is observable in the canyon of the stream at many points, notwithstanding the general surface of the mesa has been eroded to an unequal extent. There the San Juan Company is now sinking an oil well, the banks of the stream in which this and oil-bearing stratum is exposed, is only 300 feet from the surface, lying immediately adjacent to the stream; whereas, higher up the stream, and where a magnificent oil showing has been made by sinking an ordinary miner's shaft, the surface of the general country is about 1,000 feet above the water's surface.

The San Juan Company has sunk in this stratum, with a pick and shovel, various openings or shafts varying from eight to ten feet to as much as thirty-three feet, in every one of which there is a fine showing of oil, the deepest of these shafts being thirty-three feet, which now holds fifty barrels of oil. The shaft could be carried



no deeper because of the great inflow of oil and water and gas.

The San Juan Oil Company ordered new oil well machinery from the east as early as last May. It arrived at Bluff City last July, but it was found impossible to set it up and get it running in the oil field until the first day of November, when drilling commenced.

### OHIOANS IN UTAH COUNTY.

County Recorder Herbert S. Pyne of Provo interested the J. Sloan Johnson Mining & Investment Company of Cleveland, O., in the Utah County oil prospects. Mr. Johnson who is an old oil man, personally inspected the field and was enthusiastic in his estimate of its possibilities. Acting as the company's agent he has located 7,200 acres of oil ground at the head of White River, near the reservation divide, 4,320 acres in Tie Fork, north of Tucker, and 3,900 acres near Thistle Junction. In the Tie Fork country some prospecting has been done for asphaltum with good results.

### ELATERITE DEPOSITS.

About this time Joseph Leiter of Chicago became interested in oil shales in the vicinity of Soldier Summit, and his representative, Captain J. A. Eades, located land and spent considerable sum of money in prospecting the county for elaterite, gilsonite and other hydrocarbons. That the investigation of these shales and other hydrocarbons proved in a large measure satisfactory is borne out by the fact that Mr. Leiter has taken out patents for 200 acres of land a short distance north of Soldier Summit. This company has ten tons of elaterite on the ground and has closed down until spring. Dr. Griswold and Dr. Woodruff and company of Salt Lake have eight claims in this vicinity and have also closed down until spring. It is under the management of William Harrison.

The Summit Placer Mining company, composed of New York capitalists, with holdings of about 1,000 acres of ozokerite lands a little east of the depot site, are conducting an active campaign of development work through the winter. This property was purchased last

April, and under the management of Colonel A. B. Carrier, formerly of Buffalo, N. Y., an excellent showing has been made. A shaft, which was begun by the former management, is now down 150 feet, and drifts, each about 100 feet long have been run on the vein at 40, 60 and the 100-foot levels. Large amounts of mineral wax have been disclosed.

### THE OLD JUAB WELL.

The first oil well drilled in Utah was not for the purpose of finding the stuff in the fluid state, but to prospect the depth of the oil-bearing shales in Juab county.

### DISTILLED IN SANPETE.

In Sanpete county the possibilities of producing rich paraffine from the shales which are formed in abundance is attracting more than usual attention. The Bald Mountain Oil Company has recently made several experimental tests of extracting oil, by the use of a small retort, which have shown a very satisfactory result. Capitalists and experts from the east have examined the shale and pronounce it equal to any in the state.

A large number of locations have been made near the shale outcroppings, and it is proposed to test the ground for oils by putting down wells.

A tunnel is now in 150 feet. The management expects to tap the vein at a depth of 300, the vein is 50 feet between walls, the material has maintained an average of 40 per cent oil to the cubic yard of shale. The company is about to put on a \$5,000 plant which will be used to fry out the lubricant.

### UTAH SHALE COMPANY.

The Utah Shale company was incorporated in June, 1901, with a capital of 500,000 shares of the par value of 10 cents. The officers are: W. H. Hackney, president; S. L. Hague, secretary; Frank R. Ball, treasurer; principal office, Salt Lake. This company controls 1,600 acres of land in Utah county on the Rio Grande Western Railway, in the vicinity of Tucker, Utah. These holdings cover the outcropping of a large ledge of shale, aver-

aging about forty feet thick. The analysis of this shale shows 48 per cent oil, of which is about three-fourths a heavy lubricant. No development work has been done. The individuals interested in this company control 1,000 acres of shale land about two miles north of Soldier Summit.

#### OTHERS IN THE FIELD.

The Duquesne Oil Company incorporated under the laws of South Dakota in August, 1901, with a capital stock of 500,000 shares, of the par value of \$1 per share. The officers are: A. M. Marion, president; John Swan, vice president; E. M. Norton, secretary and treasurer; S. L. Boggs, general manager. Principal office, Pittsburg, Pa. The company controls 640 acres of land five miles south of little grand station on the Rio Grande Western. The company has ordered a rig and will begin boring within a short time.

The Peerless Oil Company was organized under the laws of South Dakota on October 4th, 1901, with a capital of 500,000 shares, of the par value of \$1 per share. The officers are: Captain J. F. Schley, president; J. J. Meyers, vice president; J. L. Boggs, secretary and treasurer; principal office, Salt Lake City. The company controls 640 acres of land in Grand County, five miles south of Little Grand station on the Rio Grande Western Railroad. The company had ordered a No. 8 Sterling rig and drilling will begin immediately after the machinery is put on the ground. Officials of the company believe that oil will be struck at a depth of 700 feet.

The Western Oil Company was incorporated under the laws of Utah on November 15, 1901, with a capital of 500,000 shares, of the par value of \$1 per share. The officers are: William Hatfield, president; A. J. Davis, vice president; Joseph Oberndorfer, secretary; W. H. Clark, treasurer; principal office, Salt Lake.

The company controls 2240 acres of land in Emery and Grand Counties, several miles southeast of Green River station. Preparations are being made for active development work.

The Arizona-Utah Paraffine Oil Company was incorporated under the laws of Arizona on October 15, 1901,

with a capital of 1,500,000 shares, of the par value of one dollar. The officers are: J. F. Wilson, president; Henry J. Allen, vice-president; Homer R. Wood, secretary and treasurer; J. A. C. Freund, general manager. Principal office, Salt Lake City. The company controls 1560 acres of land three miles north and 1240 acres seven miles southeast of Green River station. This company expects to begin drilling by January 1st.

The Carbon Oil company was incorporated under the laws of Utah in June, 1901, with a capital of 1,000,000 shares, of the par value of 25 cents. The officers are: W. P. Lynn, president and treasurer; J. F. Critchlow, vice-president; George Westervelt, secretary. Principal office, Salt Lake City. The company controls 3,000 acres of land in Willow Creek district, near Colton, Utah. A well will be put down early in the spring.

W. H. Hendricks and Boston associates control 15,000 acres of land five miles east of Colton, and contemplate boring three wells.

The Price Oil Company was incorporated under the laws of Utah on August 1, 1901, with a capital of 600,000 shares of stock, of the par value of 10 cents. The officers are: L. Lowenstein, president; J. R. Sharp, vice-president; Morris Sommer, secretary; A. W. Dowds, treasurer. Principal office, Salt Lake City. The company controls 15,040 acres of land in Carbon County, Utah, forty miles north of Price, Utah. Arrangements have been made to begin active development work.

The Green Oil Company was incorporated under the laws of Utah in May, 1901, with a capital of 1,000,000 shares of the par value of 25 cents. The officers are: James H. Moyle, president; George Romney, Sr., vice-president; F. C. Basset, secretary and treasurer. Principal office, Salt Lake City. The company controls 2560 acres of land in Emery County, Utah, ten miles southeast of Green River station. No development work.

The Utah Oil and Paraffine Company was incorporated under the laws of Utah in March, 1901, with a capital of 250,000 shares, of the par value of 10 cents. The officers are: W. B. Folsom, president; R. G. Wilson, vice-president; H. Bennet, secretary and treasurer. Prin-

cipal office, Salt Lake City. The company controls 160 acres of land in Utah County, about ten miles south of Thistle Junction. No development work.

The Chicago Oil company was incorporated under the laws of Utah in June, 1901, with a capital of 300,000 shares, of the par value of 10 cents. The officers are: Frank Burmester, president; R. G. Wilson, vice-president; H. Barnett, secretary and treasurer. Principal office, Salt Lake City. The company controls 640 acres of land in Grand County, south of Green River station. No development work.

The El Verde Rio Oil Company was incorporated under the laws of Utah in July, 1901, with a capital of 2,500,000 shares, of the par value of \$1 per share. This company controls 640 acres of land, situated near Hiliard's and in the Fossil district of Wyoming, and 2800 acres of land in Grand County, Utah, in the Green River district, four miles south of Green River station.

The Utah Crystal Oil Company was incorporated under the laws of Utah on August 28, 1901, with a capital of 500,000 shares, of the par value of 5 cents. The officers are: N. B. Campbell, president; C. J. McNitt, vice-president; A. A. Meredith, secretary; J. L. Craig, treasurer. Principal office, Salt Lake City. The company controls 640 acres of land in Utah County, six miles southeast of Colton, Utah. No development work.

The Utah Oil and Refining Company was incorporated under the laws of Utah on July 1, 1901, with a capital of 1,000,000 shares, of the par value of 1 cent. The officers are: J. A. Meridath, president; A. H. Kelly, vice-president; W. H. Hennefer, secretary. Principal office, Salt Lake City. The company controls 2560 acres of land in Utah County, four miles southeast of Colton. No development work.

The Spanish Fork Oil Company was incorporated under the laws of Utah on July 24, 1901, with a capital of 500,000 shares, of the par value of 10 cents. The officers are: John A. Grose, president; W. L. Jones, vice-president; P. E. Arnold, secretary and treasurer. Principal office, Salt Lake City. The company controls 480 acres of land in Utah County.

The Garn Oil Company was incorporated under the

laws of Utah on March 6, 1901, with a capital of 500,000, shares of the par value of 10 cents. The officers are: W. C. Hall, president; W. Old, vice-president; L. H. Dunning, secretary. The principal office, Salt Lake City. The company controls 240 acres of land in Grand County, Utah, four miles south of Green River station. Several years ago a shaft was sunk on the ground to a depth of fifty feet and oil is now seeping through the rocks into the shaft. Some development work has been done this year, but a new well in the neighborhood of the old shaft is now contemplated.

The Baku Oil company was incorporated under the laws of Utah, with a capital of 1,000,000 shares of the par value of 19 cents. The officers are: A. Scott Chapman, president; Daniel Dunne, vice-president; J. T. Lynch, secretary; H. P. Mason, treasurer. Principal office, Salt Lake City. The company controls 9920 acres of land in Emery and Carbon counties, Utah. Part of this land is about eight miles west of Green River station and part of it is about ten miles east of Colton. Arrangements have been made to sink a well on the Colton property.

The Home Lubricating Oil Company was incorporated under the laws of Utah in June, 1901, with a capital of 500,000 shares of the par value of 20 cents. The officers are: Heber M. Wells, president; C. S. Burton, secretary and treasurer. Principal office, Salt Lake City. The company controls about 20,000 acres of land in Grand and Emery Counties, Utah, in the immediate vicinity of Green River station. Arrangements have been made for active development work.

The Utah Lubricating Oil Company was organized under the laws of Utah, with a capital of 500,000 shares of the par value of 10 cents. The officers are: J. R. Walker, president; C. A. Walker, secretary and treasurer. Principal office, Salt Lake City. The company controls 640 acres of land in Grand County, about three miles south of Green River station.

The Goldberg Oil and Mining Company was incorporated under the laws of Utah in August, 1901, with a capital of 700,000 shares of the par value of 10 cents. The officers are: Herman Hill, president; Charles Goldberg, vice-president; L. O. Hoffman, secretary. Prin-

cipal office, Price, Utah. The company controls 900 acres of land in the Green River district, in Emery County, Utah. No development work.

The Paraffine Oil Company of Utah was incorporated under the laws of Utah in February, 1901, with a capital of 250,000 shares, of the par value of 1 cent. The officers are: George Morrow, president; Hyrum E. Haynes, vice-president; L. M. Bailey, secretary and treasurer. Principal office, Salt Lake City. The holdings of the company are in Dairy Fork canyon, Utah county, nine miles from Thistle Junction. No development work.

The New York-Utah Oil and Mining company was organized under the laws of the State of Utah, with principal place of business at Price, Carbon County, Utah, on September 12, 1901. It has 35,000 acres of land in seven groups, situated in Carbon, Emery, Utah, Wasatch and Sanpete Counties. The capitalization of the company is 1,000,000 shares, of the par value of \$1 each. Machinery for two rigs have been purchased, and drilling will begin about the 1st of January, 1902.

The Price Home Oil and Mining Company is one of the most extensive in its holdings in the State of Utah. It has 6080 acres of oil lands, located about eight miles east of Price. It lies just north of the New York-Utah Oil and Mining Company's property.

The Sunday Morning Oil Company was incorporated under the laws of South Dakota with a capital of 500,000 shares, of the par value of \$1. The officers are: Charles G. Plummer, president; H. B. Cole, vice-president; S. L. Boggs, secretary and treasurer. The company controls 1280 acres of land five miles southwest of Little Grand station, on the Rio Grande Western Railway. No development work.

The Intermountain Oil Company was organized under the laws of Arizona with a capital of 500,000 shares, of the par value of \$1. The officers are: J. E. Falconer, president; Philip Hahn, vice-president; M. K. Young, secretary and treasurer. Principal office, Los Angeles, Cal. The company controls 1340 acres of land in the Green River district of Utah, situated five miles southeasterly from Green River station, on the Rio Grande Western Railway. No development work.

Other Utah Incorporators are:

Salt Lake Oil & Gas Company, capital \$250,000, in shares of 25 cents each. J. A. Kuykendall, president; B. S. Rives, secretary and treasurer; property, Green River, Utah.

Golden Scepter Oil Company, \$5,000, Price, E. C. Lee, president.

Milton Land & Oil Company, \$100,000, Salt Lake City, D. J. Williams, president; Lewis Telle Cannon, secretary; holdings in Emery County.

Annual Oil Company, \$20,000, Salt Lake City, W. M. Spencer, president; Edward E. Bush, secretary.

California-Vernal Oil Company, \$24,000.

Mr. H. M. Dukes of Findlay, O., has been in Utah since last April, investigating the oil possibilities of the state. He says he is representing eastern capitalists, and has control, by leases, options and otherwise, nearly a quarter of a million acres of land in the state, 30,000 acres of which are in Davis and Salt Lake Counties, north of the Hot Springs, along the eastern shore of the lake. He has recently made application to lease the large tract of land belonging to the city in North Salt Lake. Mr. Dukes refuses to disclose the names of his associates.

### THE SANPETE OIL FIELDS.

The Sanpete Oil Fields are located in the Sanpete Basin, about 126 miles south of Salt Lake City. It is beyond a fact that conditions for the production of immense quantities of petroleum obtained and many oil seeps, sulphur and gas springs are very plentiful in the valley. On each side of the Basin we find large ledges of shale, these ledges are attracting more than usual attention.

The Bald Mountain Oil Company recently made several experimental tests of extracting oil by the use of small retort which is said to have shown a very satisfactory result. Capitalists and experts from the east have examined the shale and pronounced it equal to any in the state.

This valley is about 20 miles south of Soldier Summit District and which is very promising to become a



large oil producer and is about 30 miles northwest of the great oil fields of Emery County. This basin has a great seepage as the valley is low and the mountains running high which are overlying one of the largest coal fields in the west, with this and the large body of shale and the immense volumes of gas which are blowing out all over the valley with great force, which is an excellent indication of developing into a good oil producing district. The wells will have to be driven in the neighborhood of 2,500 feet for good results.

### REPORT OF STATE COAL MINE INSPECTOR. FATAL ACCIDENTS FOR 1901.

William Lager, an outside laborer, was burned to death at Sunnyside Mine on March 25th, 1901. He was subject to fits. He had built a fire on the ground to warm his coffee for his dinner. While warming his coffee he took one of these fits and before he was discovered he had burned to death. There was no inquest held over his body.

Joseph Parrish, a miner, was killed in Winter Quarters Mine No. 1 on April 18th, 1901. Parrish was working in room 25 on fifth level off eighth rise, while loading a car some coal fell from the rib striking and squeezing him against a mine car. He received internal injuries from which he died twenty minutes after the accident. No inquest being held over his body.

Nate Price, a driver in Sunnyside Mine, was injured, after a long time. Price was driving a spike team. He jumped off the trap to whip them to whip them up, he jumped on the trap again and lost his balance, falling under the cars he took his back from which he died. The accident occurred where the team leaves trap to work. The coroner's inquest held on accident to the driver's back.

Sunnyside, Utah, Aug. 15, 1901.

Was the cause of the death of Benj. Price, a miner, and the coal miner. Price came to his death falling under the cars he took his back and same running

over his body, and that no blame is attached to any one for said accident.

JOHN HOLLY, Foreman,  
JOHN P. HITE,  
DAVID HARRINGTON,

Matt Salma, a miner in Winter Quarters Mine No. 4, was injured on the 19th day of August, 1901. Salma at the time of the accident was using a pick to take down some loose coal when the coal fell upon him, causing a fracture of the skull, bruises on face and neck and scalp wound on back of head 3½ inches long. Salma died four hours after the accident. There was no inquest held over his body.

Wyndham Thomas was killed in the Winter Quarters Mine No. 1, on the 24th day of August, 1901. Thomas was working in the rock tunnel and at the time of the accident, was standing on a loaded car drilling a hole in some rock when the rock fell upon him, killing him instantly. Report of Coroner's Jury was as follows:

An inquest having been held at the residence of Bedlington Lewis, in Scofield Precinct, County of Carbon, on the 24th day of August, 1901, before J. W. Bowman, Justice of the Peace in Winter Quarters Precinct, in said County, upon the body of Wyndham Thomas, there lying dead by the jurors whose names are hereto subscribed. The said jurors upon their oath do say that the deceased came to his death by the accidental fall of rock and there is no blame to be attached to either the Pleasant Valley Coal Company or to the deceased, or any person connected therein. In testimony whereof the said jurors have hereunto set their hands the day and year aforesaid.

(Signed.)

J. P. CURTIN,  
C. H. MUHLESTEIN,  
JOSEPH RICHARDS,

Subscribed and sworn to before me this 24th of August, 1901.

(Signed.)

J. W. BOWMAN,  
Justice of the Peace.

James Cunningham, a miner, was killed in Sunnyside Mine No. 1 on the 3rd day of October, 1901. Cunningham and a few other miners were driving an over-cast on second level, main slope. They, Cunningham and his partner, Hughes, had fired a shot, taken down all loose rock, sounded roof and pronounced it safe, about 20 or 30 minutes afterwards rock fell from the roof, instantly killing Cunningham and his partner Hughes.

Edward Hughes was killed in the Sunnyside Mine on the 3rd day of October, 1901. Hughes was working with James Cunningham, when rock fell from the roof killing both instantly. Report of Coroner's Jury is as follows:

An inquest having been held at the Utah Fuel Company boarding house, in Sunnyside Precinct, Carbon County, on the 4th day of October, 1901, before A. E. Gibson, Justice of the Peace in said county, and in said precinct upon the bodies of James Cunningham and Edward Hughes, there lying dead by the Jurors, whose names are hereto subscribed. The said Jurors upon their oath do say that the above named men met their deaths in the No. 1 mine of the Utah Fuel Company at Sunnyside, by a fall of rock under which they were working. According to the evidence of eye witnesses no blame is attached to any one. We return a verdict of accidental death.

In testimony whereof the Jurors have hereunto set their hands the day and year aforesaid.

(Signed.)

ROBERT WILLIAMS,  
JOHN POTTER,  
ROBERT BAIRD.

Andrew Christenson, waterman in Winter Quarters Mine No. 1 was killed on the 24th day of October, 1901. Christenson was watering the rooms and entries on the farish level, about 9:50 p. m. He left his hose and entered the room of Andrew Beday and John Schenak, which was about 650 feet from where he left his hose. While standing in this room by the end of a mine car, talking to Beday and Schenak, some coal fell from the roof, striking Christenson on the head and back, caus-

ing lacerated wound over small of back and over region of kidneys, lacerated wound on scalp from which he died at 10 o'clock Oct. 25th, 1901. Following is a report of coroner's jury:

At an inquest having been held at the residence of Reese Phillips, in Winter Quarters Precinct, Carbon County, on the 26th day of October, 1901, before J. W. Bowman, Justice of the Peace for said Precinct and County, upon the body of Andrew Christianson, there lying dead by the jurors, whose names are hereunto subscribed, and said jurors upon their oath do say, that Andrew Christianson came to his death by an accidental falling of coal at the Pleasant Valley Coal Company, Winter Quarters Mine No. 4, on the night of October 24th, 1901. No blame is attached to the Company or any one connected therewith.

(Signed.)

JOHN GILBERT,  
JAMES P. CURTAIN,  
C. H. MUHLESTEIN.

Batista Aimo, a miner, was killed in Castle Gate Mine No. 1, on the 20th day of December, 1901. He was mining coal on the corner of pillar between 3 and 4 rooms on fourth level, off the tenth rise, when a piece of coal fell and struck him on the head and back, causing fractured skull and the tissues over the entire back were lacerated and contused, from which wounds he died 15 minutes later. Following is a report of the coroner's jury:

State of Utah,  
County of Carbon,  
Castle Gate Precinct.

At an inquest held in Castle Gate, the 20th of December, 1901, before Justice of the Peace Lamph, upon the body of Batista Aimo, the undersigned jurors upon their oath do say that said Batista Aimo came to his death by a bounce of coal and not having the same spragged or propped resulted in his death.

After hearing all testimony and evidence in the above case, we, the jurors, return a verdict of accidental

death, exonerating all parties from blame for said accident.

EUGENE SANTSCHI,  
WILLIAM FEATHERSTONE,  
A. ELEGANTI,

Jurors.

### NON-FATAL ACCIDENTS FOR 1901.

William Jensen, a miner, was injured in the Morrison Mine on the 12th day of January, 1901.

Jensen was riding on a loaded car, which was loaded in such a way that some of the lumps were projecting over the side of the car. In passing under a set of timber this projecting coal struck one of the posts, knocking it out and letting the cup-piece fall, which with some rock struck Jensen on the leg.

William J. Brace, a driver, was injured in the Sunnyside Mine No. 1 on the 20th day of February, 1901.

Brace got off his car on the wrong side and was caught between the car and the rib, causing a scalp wound and depressed fracture of the skull.

John Smith, a miner, was injured in the Winter Quarters Mine No. 1 on the 5th day of March, 1901. Rock fell from the roof, striking him on the head, shoulder and left leg, fracturing leg below knee.

W. H. Tidwell, a driver, was injured at Sunnyside Mine No. 2, outside, on the 7th day of April, 1901. Tidwell was driving a spike team and was in the act of turning, when one of the horses fell on him, breaking his leg.

Julian Borrow, a driver, was injured in the Sunnyside Mine No. 1 on the 10th day of April, 1901. He was hauling a car along the entry, when the mule turned out the wrong way and he was squeezed between the shaft on the mule and a prop. He was injured internally.

George Holland was injured in the Wasatch Mine by a piece of rock falling from roof and striking him on left hip. This occurred June 18th, 1901.

Alma Jones, a driver in Sunnyside Mine, was injured on the 1st day of July, 1901. He was on second entry left of first rise when the rope broke, letting a trip of cars run back, which struck him. He received frac-

ture of upper end of right thigh bone and contusion of left hand.

Frank Fowler, a miner, was injured in the Sunnyside Mine No. 1 on the 22nd day of July, 1901. Fowler was employed driving main slope. After firing shot and waiting for smoke to clear away at switch of third north back entry, a trip, coming down slope, jumped the track at switch, crushing Fowler against rib.

Joe Cuntari, a miner, was injured in Clear Creek Mine, on the 3rd day of August, 1901. He was working on second entry right, when some coal flew from shot and struck him on face, causing a lacerated wound on lip extending two inches up on cheek.

Jesse Kane, a driver, was injured in the Clear Creek Mine on the 14th day of September, 1901. Kane was coming along fifth left entry with an empty and jumped off his car and was squeezed between the rib and the car, breaking his collar bone.

James O. Clark, a timberman in the Wasatch Mine, was injured on the 30th day of October, 1901. Clark was riding up the slope on a trip of cars. At one point the roof is very low, and Clark, not being on the lookout, was squeezed between the roof and the car on which he was riding, causing sprain of back on left side below shoulder blade.

George Bedner, a driver in the Clear Creek Mine, on the 6th day of October, 1901, was in the act of spragging a car, when he was caught and squeezed between the car and a prop. He was squeezed in such a manner that it broke his collar bone.

#### COMMUNICATION.

Office of Gomer Thomas,  
State Coal Mine Inspector of State of Utah,  
Salt Lake City, Utah,  
December 31st, 1902.

Hon. Heber M. Wells, Governor of the State of Utah,  
Salt Lake City, Utah:

Sir:—In compliance with the requirement of the law of March 14th, 1901, relating to report on coal and

hydrocarbons by the state coal mine inspection. I have  
the honor to herewith submit to you the several annual  
report of the Department of Mines and Mining.

Very respectfully,

**GOMER THOMAS.**

State Coal Mine Inspector for State of Utah.

# REPORT FOR 1902.





# REPORT OF STATE COAL MINE INSPECTOR.

## 1902

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### INTRODUCTION.

The past year, 1902, has been a very prosperous one for all parties connected with the mining and handling of coal, and it has been a year of unusual activity in all branches of the business.

Neither capital nor labor has suffered from contentions, and the relations of the employer and the employed have been harmonious and mutual.

A much larger amount of coal could have been marketed had it not been for a scarcity of railroad cars to transport the same to the consumers.

The statistical portion of this report has been so arranged as to be in accord with the calendar year, and that part of the report which is devoted to statements in regard to the inspection of mines extends from December 31st, 1901, to December 31st, 1902. It contains tables showing the statistics relating to the location of mines, number of tons of coal produced, number of days worked, number of employees, number of accidents and their character, fatal or otherwise, and the number of pounds of powder used.

The past year has been the most prosperous year in the history of coal mining in Utah. The mines are being better ventilated, and in general are in a good condition. The work is steady and the wages are good.

In the past year 1,641,436 short tons of coal were mined, showing an increase of 258,966 short tons over the preceding year. The amount of coke produced was 137,765 short tons, an increase of 87,145 short tons over the previous year. There was also produced in the state 3,500 tons of gilsonite, about 50 tons of ozokerite, or mineral wax, and 500 tons of elaterite. The amount of

aphthon I am unable to state, as I could not obtain the proper data.

The number of employees in and about the coal mine was 2149, and the number employed in the hydrocarbon mines was 100.

The average amount of coal produced to each employee was one short ton. The number of fatalities for every 100,000 tons of coal produced was four.

The average amount of coal mined for each life lost was 25,000 tons. The amount of black powder used was 100,000 pounds. The amount of gunpowder was 100,000 pounds.

The average amount of coal mined for each life lost was 25,000 tons. The amount of black powder used was 100,000 pounds. The amount of gunpowder was 100,000 pounds. The average amount of coal mined for each life lost was 25,000 tons. The amount of black powder used was 100,000 pounds. The amount of gunpowder was 100,000 pounds.

**PRODUCTION OF COAL, COKE AND ASPHALTUM; IMPORTS  
EXPORTS AND CONSUMPTION OF SAME  
IN UTAH FOR 1902.**

	Bituminous.	Coke.	Gilsonite
Produced in Utah .....	1,641,436	139,765	3,500
Imported into Utah .....	403,190	1,790	.....
<b>Total .....</b>	<b>2,044,626</b>	<b>141,495</b>	<b>3,500</b>
Exported from Utah .....	755,060	55,906	3,500
Consumed in Utah .....	1,289,566	85,589	.....

**COAL PRODUCED IN THE SEVERAL MINES IN UTAH  
FOR 1902.**

NAME OF MINE	OPERATED BY	No. of Short Tons
Winter Quarters No. 1 .....	P. V. Coal Co. ....	377,830
Winter Quarters No. 4 .....	P. V. Coal Co. ....	35,332
Winter Quarters No. 5 .....	P. V. Coal Co. ....	8,628
Clear Creek .....	P. V. Coal Co. ....	361,487
Castle Gate .....	P. V. Coal Co. ....	333,060
Sunnyside .....	Utah Fuel Co. ....	411,857
Grass Creek .....	Grass Creek Coal Co. ....	28,557
Wasatch .....	Weber Coal Co. ....	21,284
Thomas .....	Sterling Coal & Coke Co. ....	7,901
Huntington .....	P. V. Coal Co. ....	509
Deseret .....	Kemmerer Coal Co. ....	300
Cedar Creek .....	Cedar Creek Coal & Coke Co. ..	350
Aberdeen .....	Whittemore & Ballinger .....	800
Castle Valley Mines .....	.....	550
Other Small Mines .....	.....	53,000
<b>Total .....</b>	.....	<b>1,641,436</b>

TABLE SHOWING NUMBER OF TONS PRODUCED, NUMBER OF DAYS WORKED, NUMBER OF MEN EMPLOYED, NUMBER OF PERSONS KILLED AND INJURED AND NUMBER OF POUNDS OF POWDER USED.

NAME OF MINE.	COUNTY.	Short Tons of Coal.	Tons of Coke.	No. days worked.	No. men employed.	No. Fatal Accidents.	No. Non-fatal Accidents.	No. pounds powder used.	No. pounds of dynamite.	No. mules and horses.	No. Steam Boilers.	No. of Locomotives.	No. of Coke Ovens.
Winter Quarters, No. 1.	Carbon	377,830	.....	261	414	3	5	77,856	.....	53	7	.....	.....
Winter Quarters, No. 4.	"	35,332	.....	96	552	.....	.....	11,094	.....	28	1	1	.....
Winter Quarters, No. 5.	"	8,628	.....	182	33	.....	.....	800	.....	4	1	.....	.....
Castle Gate	"	333,060	86,091	270	538	1	2	.....	36,650	22	7	.....	204
Clear Creek	"	361,487	.....	242	384	2	4	159,000	.....	23	4	.....	.....
Sunnyside	"	411,867	53,674	281	615	1	4	40,825	28,485	38	7	1	200
Aberdeen	"	800	.....	200	2	.....	.....	300	.....	1	.....	.....	.....
Grass Creek	Summit	28,557	.....	225	50	1	1	15,668	.....	9	2	.....	.....
Wasatch	"	21,224	.....	224	36	.....	.....	4,800	.....	8	4	.....	.....
Huntington	Emery	500	.....	150	2	.....	1	200	.....	1	.....	.....	.....
Deseret	"	300	.....	100	4	.....	.....	150	.....	1	.....	.....	.....
Cedar Creek	"	350	.....	100	2	.....	.....	100	.....	1	.....	.....	.....
Castle Valley	"	550	.....	180	2	.....	.....	160	.....	.....	.....	.....	.....
Thomas	San Pete	7,901	.....	395	35	.....	1	5,000	.....	3	.....	.....	.....
Other Small Mines	.....	53,000	.....	180	248	.....	.....	13,250	.....	.....	.....	.....	.....
Total	.....	1,641,436	139,765	.....	2,468	8	18	327,726	.....	.....	.....	.....	.....

TABLE SHOWING COAL TONNAGE, BY COUNTIES, FOR 1902, AS COMPARED WITH 1901.

County.	Tons for 1901.	Tons for 1902.	Gain.	Loss.
Carbon .....	1,263,886	1,528,994	265,108	.....
Summit .....	56,249	49,841	.....	5,408
Sanpete .....	2,585	7,901	5,316	.....
Emery .....	1,500	1,700	200	.....
Uintah .....	7,750	.....	.....	7,750
Other Small Mines .....	51,500	53,000	1,500	.....
Total .....	1,382,470	1,641,436	272,124	13,158
Net Gain .....	.....	.....	.....	258,966

TABLE SHOWING PRODUCTION OF COAL IN UTAH DURING 1902, ETC.

COUNTY.	Total production of Coal in Short Tons	Total Production of Coke	Average Price Per Ton.	No. of Days Worked	No. of Employees
Carbon.....	1,026,367	130,765	91.18	1,542	2,091
Summit.....	49,841	.....	.....	459	93
San Pete.....	7,901	.....	.....	345	35
Emery.....	1,700	.....	.....	580	10
Other Small Mines.....	63,000	.....	.....	180	226
	1,841,486	130,765	.....	.....	2,448

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN  
THE STATE AND THE NUMBER OF EACH THAT  
WERE IN OPERATION DURING 1902.

COUNTY.	No. of mines which employed more than six men.	No. of mines which employed less than six men.	Total by counties.	No. of large mines in opera- tion in 1902.	No. of small mines in opera- tion in 1902.	Total No. of mines in opera- tion in 1902.
Carbon .....	7	18	25	7	18	25
Summit .....	2	8	10	2	8	10
San Pete .....	1	5	6	1	5	6
Emery .....	..	32	32	..	32	32

TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES  
IN 1902 COMPARED WITH 1901.

COUNTY	1901	1902	Gain.	Loss.
Carbon .....	1,619	2,091	472	.....
Summit .....	90	88	.....	2
San Pete .....	8	35	27	.....
Emery .....	12	10	.....	2
Small Mines .....	.....	.....	.....	.....



**TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES  
IN OPERATION AND THE NUMBER OF DAYS  
WORKED IN 1901 AND 1902.**

COUNTY.	No. of Mines in Operation in 1901.	No. of Mines in Operation in 1902.	Gain	Loss	Average No. of Days Worked in 1901.	Average No. of Days Worked in 1902.	Gain	Loss
Carbon .....	26	25	.....	1	1,719	1,542	.....	177
Summit .....	10	10	.....	.....	458	459	1	.....
San Pete .....	6	6	.....	.....	450	305	.....	145
Emery .....	32	32	.....	.....	560	580	20	.....

**TABLE SHOWING NUMBER OF FATAL, SERIOUS AND NON-  
SERIOUS ACCIDENTS AND THE COUNTY IN WHICH  
THE SAME OCCURED DURING 1902.**

COUNTY	Fatal	Serious	Non-serious	Total
Carbon .....	6	1	15	22
Summit .....	1	.....	2	3
San Pete .....	.....	.....	1	1

**MINES WHICH GENERATE LIGHT CARBURETTED HYDROGEN  
GAS (FIREDAMP).**

Carbon County..... { Caste Gate.  
                                  { Sunnyside.

Summit County ..... { Grass Creek.

## ACCIDENTS FROM FALLS OF COAL AND ROCK.

In the mines of Utah accidents from falls of coal or rock, from the sides and roof, are very numerous, and the same can be said of other states where coal is being mined, and "falls" always have been and always will be the chief cause of accidents.

In the mines of Utah during 1902, five fatal accidents were caused by falls of rock and coal, two by cars and one by elevator. Four wives were made widows and thirteen children made orphans by these accidents.

The above facts bring out the momentous question; can the number of these accidents be reduced? I answer emphatically; Yes, but the only way that it can be reduced is by the unceasing vigilance on the part of the employer and the employed. The employer should formulate a series of rules for systematic propping and the employed should use every effort to see that these rules were carried out, and also to set up props when needed, even if the rules are not specific on all points. When these rules are made the Inspector, on his visits of inspection, can see that they are not violated.

If the Inspector had the authority, he would enforce a rule, that all miners in rooms should put up props every six feet whether the roof was good or bad and when the roof was bad they should stand as close as necessary.

Some of the operators are against this because it would take more timber and add to the cost, the miners are against it because it entails extra labor. Neither seem to understand what this little cost and extra labor would mean to the miner himself, for what does both amount to compared with the sacrifice of a human life.

I think the Legislature should pass a compulsory law on this important subject and add a severe penalty for its violation, which would reach both operator and miner alike, for laws make no allowance for ignorance; neither civil, moral nor physical law alters its workings to accommodate the individual.

Too much cannot be said on this important subject for the miner who toils in the black bowels of the earth

for his daily bread, and likewise, his employer must be protected and governed by a state law.

TABLE SHOWING CASUALTIES OF 1902 COMPARED WITH 1901.

COUNTY.	1901			1902.			Gain.	Loss.
	Fatal.	Non-fatal	Total.	Fatal.	Non-fatal	Total.		
Carbon .....	9	9	18	7	15	22	4	..
Summit .....	..	1	1	1	2	3	2	..
San Pete.....	..	2	2	..	1	1	..	1

The following is an extract from the Annual Report of the Bureau of Mines of Pennsylvania, 1902.

#### "A BOON TO MINING INTERESTS.

"In the interest of the employees in gaseous mines who use explosives to bring down the coal and whose lives are endangered by explosions of gas, also in the interest of operators whose mines are dry and gaseous, and who naturally are in dread of explosions and mine fires resulting from them, I publish the following statement of an improved cartridge, the use of which I feel assured will do much to avert the dangers from such explosions and fires.

"From what I have heard of the efficiency of the Safety Blasting Cartridge I deem it a boon to those who are engaged in mining of coal, and I think it my duty to call the attention of those in charge of mines to its advantages. I hope that its adoption will be the means of decreasing the loss of life and the destruction of property from explosions of gas and mine fires.

#### DESCRIPTION.

"This cartridge is composed of an inner and an outer tube made of specially prepared material with the intervening space between the inner and outer tube

filled with water; it is made in a number of sizes to meet the various requirements to produce the desired results.

"The method of its preparation is simple and easy, rendering it feasible to place in the hands of any one for use. The explosive is placed in the small or inner tube, with the firing wires adjusted to protrude, and the tube is firmly corked, this loaded tube is then placed in the larger tube and the entire surrounding space is filled with water. The firing wires are carried through the cork inserted in the other tube which is firmly driven home, and the cartridge is then ready for the shot hole. This cartridge is adapted for either firing wires, fuse or squib.

"The efficiency of the cartridge in action is perfect, there being no flash, flame or spark.

"At the moment of the explosion every vestige of fire is instantly destroyed and the danger from secondary explosions, whether in gaseous or dry mines, is entirely eliminated, regardless of how hazardous the conditions may be.

"In consequence of the water acting as a cushion or 'tamp,' much of the dangerous tamping is unnecessary and as a greater lateral force is exerted by the same given quantity of explosives, the output of each blast is fully 20 per cent more than is produced by the present method, and in addition there is no excessive shattering.

"The cartridge prevents the miner from using more of the explosive than he is allowed, thus preventing injury to the sides and roof of the mine by overcharging in a blast.

"We claim for this cartridge and can substantiate such claim from actual practice, that there is no danger of loss of life or injury to the miner, and the property of the mine owner is thoroughly protected from loss or damage."

The above is concluded with a number of endorsements from the Mine Inspectors, Mine Foremen and Managers of the mines of Pennsylvania, and is highly recommended for use in gaseous mines.

As the mines in our state give off more or less gas, and the coal is of a dry, dusty and explosive nature, that most of our explosions and fires are caused by the sec-

ondary explosion of the blasting powder now in use in the mines of Utah, I would urge our operators to look into the above and carefully consider it, for if this cartridge could be introduced and used successfully in the mines of Utah, it would be nothing short of a God send to the miners of this state.

TABLE SHOWING THE NUMBER OF MINES EMPLOYING THE DIFFERENT METHODS OF VENTILATION  
AND THE KIND OF OPENINGS.

County	CHARACTER OF OPENING.				Total.	MODE OF VENTILATION.				Natural.	Small. Unknown Method.
	Drift.	Shaft.	Slope.	Not Known.		Fan.	Furnace.	Steam and Exhaust Pipe.			
Carbon .....	28	...	2	...	26	2	...	...	...	16	...
Summit .....	3	...	2	...	5	2	...	...	...	3	...
Emery .....	32	...	...	...	32	...	...	...	...	32	...
San Pete .....	4	...	2	...	6	...	1	...	...	6	...

TABLE SHOWING LOCATION ETC. OF MINES IN UTAH.

Name of Mine	Name of Operator	County	Name of Supt.	P. O. Address	Name of R. R.
Winter Quarters No. 1.	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R. R.
Winter Quarters No. 4.	P. V. Coal Co.	"	"	"	R. G. W. R. R.
Winter Quarters No. 5.	P. V. Coal Co.	"	"	"	R. G. W. R. R.
Clear Creek.....	P. V. Coal Co.	"	Wm. Forrester	Clear Creek	R. G. W. R. R.
Castle Gate.....	P. V. Coal Co.	"	David Crow	Castle Gate	R. G. W. R. R.
Sunnyside.....	Utah Fuel Co.	"	Jos. R. Sharp	Sunnyside	R. G. W. R. R.
Aberdeen.....	Whittmore & Ballinger	Summit	A. Ballinger	Price	R. G. W. R. R.
Grass Creek.....	Grass Creek Coal Co.	"	W. L. Hansen	Coalville	R. G. W. R. R.
Wasatch.....	Weber Coal Co.	"	T. J. Lewis	Coalville	U. P. R. R.
Huntington.....	P. V. Coal Co.	Emery	Wm. Forrester	Clear Creek	U. P. R. R.
Deerfoot.....	Kemmerer Coal Co.	"	Thos. D. Reese	Wales	R. G. W. R. R.
Cedar Creek.....	Cedar Creek Coal Co.	"	Wm. Howard	Huntington	R. G. W. R. R.
Thomas.....	Sterling Coal Co.	San Pete	S. H. Kerr	Manti	San Pete Valley R. R.

## PLEASANT VALLEY COAL CO. AND UTAH FUEL CO. MINES.

These companies own and operate seven mines, which are located in Carbon County. During 1902 these companies produced 1,528,194 tons of coal and 139,765 tons of coke; 1,099,362 tons of coal were produced by the Pleasant Valley Coal Company's mines at Winter Quarters, Castle Gate and Clear Creek, and 411,857 tons produced by the Utah Fuel Company's mines at Sunnyside.

Fifty-four per cent of the coal mined by these companies is used in Utah, and forty-six per cent is shipped outside the state. Of the coke made, sixty per cent is used in Utah and forty per cent is shipped outside the state.

The two companies employ approximately twenty-one hundred men.

The Utah Fuel Company and the Pleasant Valley Coal Company have expended \$303,000.00 for improvements, year ending Dec. 31st, 1902, and further improvements have been authorized amounting to \$105,000.00.

In the several mines operated by these companies there were seven fatal accidents and fifteen non-fatal accidents during 1902.

### WINTER QUARTERS MINES NOS. 1, 4 AND 5.

These mines are owned and operated by the Pleasant Valley Coal Company and are situated about 115 miles southeast of Salt Lake City, on a branch of the R. G. W. Railway.

No. 1 and No. 4 mines are worked by drifts, No. 5 is a slope. They are all ventilated by artificial ventilation. The power used for haulage is electricity, comprising one electric locomotive and five electric hoists.

All main entries are lighted by electric lights.

The production of these mines during 1902 was 411,790 short tons of coal, consuming 89,750 pounds of powder, and employing 552 men and 85 horses, working 265 full days. The coal in this mine is all mined with picks.

Summary of wages paid at the Winter Quarters



**Mines:** Mine foreman, \$115 per month; mine fire boss, per day, \$3.00; miners, per ton, 60c.; miners, per day, \$2.50; timbermen, per day, \$2.75; trackmen, per day, \$2.75; pumpmen, per day, \$2.50; engineers, per month, \$110.00 and \$75.00; drivers, per day, \$2.50; trappers, per day, \$1.00; inside labor, per day, \$2.50; outside labor, \$2.25. Mine superintendent, Thomas J. Parmley. Mine foreman, Andrew Hood.

On my first official visit of inspection to the Winter Quarters Mines Nos. 1, 4 and 5, Feb. 19th, 1902:

On my inspection of No. 1 mine I found it well watered and timbered, but on the tenth rise I found lots of smoke in all the levels.

I also see that on the fifth, sixth and seventh levels off eighth rise there are 72 miners and 10 day men working in the upper split, making 82 men in one split—seven more than the law allows in one split. I also find that the return airway is far too small for the amount of air that is traveling through it.

This impairs the fan by throwing too much of a load upon it. If you enlarge this airway you will enable the fan to pull more air through, and in this way have a better chance to keep the mine free from smoke.

On this visit I also visited Nos. 4 and 5 mines and found them to be in a very good condition.

I would suggest that they make the return airway in No. 1 mine larger. It must be done sooner or later, so I ask that it be done at once.

On my second visit of inspection, June 4th, 1902, I found the mines in a satisfactory condition, with the exception of No. 1 mine. My suggestion in regards to making the return airway larger had not been complied with.

On my third official visit of inspection, August 8th to 10th, 1902, of mines Nos. 1 and 5, I found both mines in a fair condition, with the exception of a few rooms on the upper level off eighth rise, which were a little dry.

On the fifth and sixth levels off eighth rise I found a heavy squeeze, which rendered it in an unsafe condition. No. 5 was in a good condition.

My fourth official visit of inspection was on November 1st to 3rd, 1902. On this visit I inspected the ma-



chinery and the outside workings, and found everything in good working order.

On my fifth official visit of inspection, November 22nd to 27th, 1902, I was called to inspect the scene of accident in which John Maskel was killed. This accident occurred in room 22, on eighth level off eighth rise entry, and in my opinion it was not a dangerous place if the props had not been knocked out. I must say that this is another of those accidents due to the carelessness of the miner in being in too much of a hurry to load his car, and by so doing the miner was neglecting his duty and ignoring the laws of Utah.

I would suggest that you call the attention of the miners to the Mining Laws of Utah, Section 14, General Rules, as I think they should be made to understand this part of law and govern themselves accordingly.

On my inspection of your mine I found it in a fair condition, with the exceptions of the tenth rise entry and all its levels. This portion of the mine did not have enough air to carry away the smoke. The smoke was so thick in these places that it was almost impossible to see the sides and roof of the entries. Under these conditions I do not consider the mine in a safe condition.

As I went down through the ninth rise, which is the return airway for this district, I found one place in the airway that didn't have over thirty-two feet area. I called the attention of the mine foreman to this and advised him to see to it at once, as I think this is where most of the trouble is.

I would call your attention to the amount of air that is going in the main intake. On Nov. 21st, 1902, there were 41,750 cubic feet, and in the split to the new main there were 18,080 cubic feet. Split to main entry, inside tenth rise, 6,120 cubic feet. Return from all levels below sixth off tenth rise, 15,600 cubic feet. Going up the eighth rise to the fourth level, 9,715 cubic feet. Now, you will find by reading these measurements that you have lost 23,670 cubic feet of air from your main intake to the inside of eighth rise on the new main. This will show you that most of your trouble is between the

main intake and the inside of eighth rise on the new main.

Now, I would suggest that you see your mine foreman in regards to this and have him remedy this as soon as possible, as there must be more air going into the tenth rise.

I would also suggest that you leave enough coal under the clod, where it is so bad, to keep it up. There are a few rooms in your mine where this was done and it worked all right. I am pleased to see that the management is working to carry out my suggestions.

#### CLEAR CREEK MINE.

This mine is owned and operated by the P. V. Coal Company, and is situated about six miles south of Scofield on a branch of the R. G. W. Railway.

During 1902 this mine produced 361,487 short tons of coal, consuming 159,000 pounds of powder, employing 384 men and 23 horses and working 250 days.

This mine is worked by a drift and has artificial ventilation, being ventilated by a fan which produces 88,629 cubic feet of air per minute.

All haulage is done by means of a tail-rope. The pumps are run by compressed air. The summary of wages paid at this mine is as follows: Mine foreman, \$115.00 per month; mine fire boss, \$2.75 per day; miners per ton, run of mine, 60c, 65c and 70c per ton; miners, per day, \$2.50; timber men, per day, \$2.75; track men, per day, \$2.75; pump men, per day, \$2.50; engineers, per day, \$2.75 and \$3.00; drivers, per day, \$2.50; trappers, per day, \$1.00; inside labor, per day, \$2.50; outside labor, per day, \$2.00.

Mine superintendent, William Forrester; mine foreman, James Russel; assistant mine foreman, T. W. Thomas.

#### CLEAR CREEK MINE.

My first official visit of inspection to this mine was on February 16th, 1902. On this date I found the mine in a good condition, well watered, well timbered and plenty of good air.

On by next visit of inspection to this mine, June

10th, 1902, I found the mine, as on my first visit, in a good condition.

On my third visit of inspection, July 15, I am pleased to say that on this date I made an inspection of the mine and found it, in general, in a good condition.

On September 27th I wrote the management the following letter:

"I call your attention to Section 8 of the Coal Mining laws of Utah, in which you will find that you must keep each and every working place, through the entire mine, damp with water or steam," as you are well aware of the danger of changing the mine from a moist condition to a dry one, I warn you not to let this condition of affairs take place. If the atmosphere becomes dry, I warn you to see that the mine is properly impregnated with water or steam, as our main source of danger lies in the dust.

On my fourth visit of inspection, Nov. 18th, 1902, I found room 3 off third west entry dry, but all other places were well watered and timbered. I find that the third east entry has not got a sufficient amount of air to keep the smoke away. After my inspection of the machinery I find that everything is overtaxed. I see that the boilers are not able to do their work without being taxed to their utmost capacity, and the injector does not do its work as it should do and should be replaced by a new one. Under these conditions there is a chance for neglect, and that means an accident.

#### CASTLE GATE MINE.

This mine is owned and operated by the P. V. Coal Company and is situated about 110 miles east of Salt Lake City on the R. G. W. Railway.

During 1902 this mine produced 333,060 short tons of coal and 86,091 tons of coke, consuming 36,650 pounds of dynamite, employing 338 men and 22 horses, working 270 days.

The mine is worked by a drift and has artificial ventilation and all haulage is done by electricity. The mode of ventilation is by a fan producing 85,995 cubic feet per minute. Also the main entries are lighted by electricity and there is a telephone connecting all the main entries with the company's office.

The summary of wages is as follows: Mine foreman, \$115.00 per month; mine fire boss, \$3.00 per day; miners, per ton, less 28 per cent for slack, 95c; timber men, \$2.50; trackmen, \$2.50; pumpmen, \$2.50; engineers, \$3.00; drivers, \$2.50, trappers, \$1.00; inside labor, \$2.50; outside labor, \$2.00.

Mine superintendent, David Crow; mine foreman, William Howard.

### CASTLE GATE MINE.

On my first official visit of inspection to this mine, Feb. 4th, 1902, I visited the outside workings and the machinery and the main traveling roads in the mine, and found the same in good working order.

My second visit of inspection to this mine was on March 10th to 15th, 1902. I inspected the entire mine and found the ventilation good in all places, well timbered, and the mine throughout in a damp condition.

On my third official visit of inspection, April 13th, 1902, I inspected the working places and found them to be in a good condition.

On my fourth visit of inspection, May 10-15, 1902, I went through the mine and found it in good condition, well ventilated, well watered and well timbered. In regards to the accident in which James Locke was killed, I will say that I visited the place of accident and found it to be in no way a dangerous one; all the testimony that was given went to show that he was standing on the platform about four feet below the shaft. The platform was 6 feet by 7 feet; the shaft was 31½ inches by 6 feet long and was smooth, except for one key slot. In this case I must say that it was purely accidental.

On June 28th, 1902, I made an official visit to this mine and found everything in good condition.

July 12th, 1902, I made my sixth official visit of inspection to the Castle Gate Mine. On this date, I am pleased to say, that I found the mine, in general, in a good condition, plenty of good ventilation, all places well timbered and kept damp.

Aug. 19th I again visited the mine and found it, as usual, in a good condition. I would call your attention to the Coal Mining Laws of the State of Utah, Section 8.

in which you will find that you must keep each and every working place throughout the mine damp with water or steam, as you are well aware of the danger from the change from a dry to a wet condition. I warn you not to allow this change to take place. If the atmosphere becomes dry I want you to see that it is properly impregnated with water or steam, as our main source of danger lies in the dust, if it should become dry.

On my eighth official visit of inspection to your mine, Oct. 30th, 1902, I went through the entire mine and found it in a safe condition; no standing gas in the mine, all places well watered, timbered and well ventilated.

I am pleased to say that the Castle Gate Mine, one of the largest producers in the state and employing the number of men it does, has been in a safe and satisfactory condition throughout the entire year, and the management has cheerfully complied with all my suggestions, and also with the laws of Utah.

#### SUNNYSIDE MINES NOS. 1 AND 2.

These mines are owned and operated by the Utah Fuel Company and are situated about seventeen miles east of Mounds, on a branch of the Rio Grande Western Railway.

No. 1 mine is worked by a slope and No. 2 mine is a drift, both being ventilated by artificial ventilation by two fans, producing 57,195 cubic feet and 57,300 cubic feet, respectively.

During 1902 these mines produced 411,857 short tons of coal and 53,674 tons of coke, employing 615 men, 38 horses, working 281 days and consuming 40,025 pounds of black powder and 28,485 pounds of dynamite.

No. 1 mine, being a slope, all haulage is done by a steam hoist and all the pumps are run by compressed air. In this mine there are ten mining machines for mining the coal, which are run by compressed air.

The haulage in No. 2 mine is done by electricity, including one electric locomotive and two electric hoists.

Summary of wages paid in the above mines is as follows: Mine foreman, \$115.00 per month; fire bosses, per day, \$3.00; miners, per ton, for run of mine, 55c;

miners, per day, \$2.50; timbermen, \$2.50 and \$2.75 per day; trackmen, per day, \$2.50 and \$2.75; pumpmen, per day, \$2.00; engineers, per day, \$2.75; drivers, per day, \$2.50; trappers, per day, \$1.00; inside laborers, per day, \$2.50; outside laborers, per day, \$2.00. Mine superintendent, Joseph R. Sharp. Mine foreman, No. 1 mine, John Crawford; mine foreman, No. 2 mine, James Harrison; assistant mine foreman, No. 2, Robt. Williams.

### SUNNYSIDE MINES.

On Jan. 30th, 1902, I made my first official visit of inspection to your mine and found everything on the inside and outside in good working order.

My second visit of inspection was on March 7-8, 1902. On this date I found the mine, in general, in a good condition, well ventilated, well watered and well timbered, in which condition I consider it safe.

On my third official visit, April 28, 29 and 30, 1902. On the 28th I inspected No. 1 mine and found it well watered and timbered. I found a few feeders of carburated-hydrogen gas; the quantity was too small to be dangerous. On the 29th I inspected No. 2 mine. I found it well watered, well timbered and with plenty of good fresh air.

On the 30th I inspected the machinery and boilers. The boilers were not in a very good condition on account of the bad water, which causes them to foam. I suggest that you use some means for purifying the water, as under these conditions they are not safe.

My fourth official visit of inspection to your mine was on July 5th and 7th, 1902. I found the mines in a very good condition, well watered and timbered, and the ventilation was very good. For the last twelve months you have had considerable sickness in your camp, the sanitary condition is very bad, I suggest that you give the camp a thorough cleaning from one end to the other.

August 30th, 1902. I made my fifth official visit to your mines and found them in good condition.

Oct. 24th, 1902. I made an official visit to these mines and found them, in general, in a good condition, well watered, well timbered and well ventilated. I found a small feeder of gas in the lower right entry. No

standing gas in the mines. I suggest that you move some of those jets farther down the slope, as I think they would give better service than at the mouth of the mine.

I call your attention to Section 8, Coal Mining Laws of Utah, 1901, in which you will see that you must "keep every working place throughout the mine damp with water or steam," as you are aware of the danger of a change from a moist condition to a dry one, I want you not to allow this condition to take place.

If the atmosphere becomes dry, I warn you to see that it is properly impregnated with water or steam, as our main source of danger lies in the dust, if it is dry."

#### WASATCH MINE.

This mine is owned and operated by the Weber Coal Company of Salt Lake, and is situated about three miles east of Coalville on a branch of the U. P. Railroad. The mine is worked by a slope and is ventilated by artificial ventilation by a ten-foot patent fan, running at the rate of 120 revolutions per minute, and passing 26,775 cubic feet of air per minute.

The mine employs thirty-six men, using eight horses. During 1902 the mine produced 21,284 tons of coal, consuming 4,800 pounds of powder.

The average selling price per ton was \$1.32, and total selling value was \$28,071. Summary of wages paid: Mine foreman, \$2.50 per day; miners, per ton, run of mine, 30c.; miners by the day, \$2.00; timbermen, per day, \$2.00; trackmen, per day, \$2.00; pumpmen, per day, \$1.50; engineers, per day, \$2.75; drivers, per day, \$1.60; inside laborers, per day, \$2.00; outside laborers, per day, \$1.60. Mine superintendent, T. J. Lewis; mine foreman, Samuel Clark.

On my first official visit of inspection to this mine, Feb. 11th, 1902, I found the mine in a good condition, well timbered and the ventilation was fair.

On my second official visit to this mine, Feb. 27th, 1902, I inspected the mine throughout and found it, in general, in a good, safe condition.

My third official visit was on May 24th, 1902. On this visit I made an inspection of the machinery and





average selling price per ton was \$1.42. The total average selling price was \$40,588.00. The mine worked 225 days during the year.

Summary of wages paid: Mine foreman, \$3.00 per day; miners, per ton, run of mine, 40c.; miners, by the day, \$2.50; timbermen, per day, \$2.50; trackmen, per day, \$2.50; pumpmen, per day, \$2.50; engineers, per day, \$2.50; drivers, per day, \$2.50; trappers, per day, \$1.75; inside laborers, \$2.25; outside laborers, \$2.00. Mine superintendent, N. L. Hansen; mine foreman, William Wilde.

My first official visit to this mine was on Feb. 13th, 1902. On this visit I inspected the mine throughout and found it to be in a very safe condition, well watered, well timbered and well ventilated.

On March 1st I made my second visit of inspection to this mine and found it in a good condition.

On May 22nd I made my third official visit of inspection to this mine and found it in a good condition, with the exception of a little squeeze in the lower part of the old workings.

On June 15th, 1902, I made an inspection of this mine I found twenty-two men working inside and four men and three boys working on the outside. The mine was working about four days a week. The air was not as good in the mine on this visit, but it was all well timbered.

July 26th, 1902, I again visited the mine and found everything in good working order.

On Sept. 10th I made another official visit to this mine and found the mine in a good condition, with thirty-one men working.

I call your attention to Section 8, Coal Mining Laws of Utah, 1901, in which you will find that you must "keep each and every working place throughout the entire mine damp with water or steam." As you are aware of the danger of a change from a moist condition to a dry one, I warn you never to allow this change of condition to take place. If the atmosphere becomes dry, I want you to see that it is properly impregnated with water or steam, as our main source of danger lies in the dust, if it is dry.

On the 6th of November I received a message stating that Thomas Birch, a miner, had been killed in this mine. I immediately departed for the mine, arriving on the 7th, and at once repaired to the scene of the accident.

The deceased and his partner, James Cherry, a miner, were working in the entry turning a room off said entry, in the testimony that was given at the inquest over the body. Mr. Cherry stated that they had just fired a shot about six minutes before the rock fell that killed Birch.

I must say that the place was not a dangerous one at all, as the entry was only 11 feet wide and 10 feet high. They had fired a few shots in the new room, which made the place a little wider than the entry was. Mr. Cherry said in his testimony that he had sounded the roof the night before, and at 4:30 p. m. of the day of the accident they had fired a shot in the room, and six minutes later the two men went back to work without sounding the roof and the coal to see if it was safe. The Coal Mining Laws of Utah, Section 14 of the General Rules, reads as follows: "Before commencing to work, and also after the firing of every shot, the miner working in the room or other place in the mine shall enter such room or place to examine and ascertain its conditions, and his assistant shall not go to the face of such working place until the miner has examined the same and found it to be safe." Now, if Mr. Cherry had done this the accident would not have happened, but instead of doing this they went back to work six minutes after firing the shot, without examining the room.

I must say that this is another of those accidents due to the carelessness of the miner, in being in too much of a hurry to load his coal, and by so doing the miner was neglecting his duty to himself and more so to his partner, who was not an experienced miner.

I would ask that you and your mine boss read Section 15 of the General Rules of Coal Mining Laws of Utah in regards to inexperienced miners, and also show Mr. Cherry where he was neglecting his duty and ignoring the laws of Utah.

### THOMAS MINE.

The Thomas Mine is owned and operated by the Sterling Coal and Coke Company of Salt Lake City, and is situated about two miles east of Sterling, on the terminus of the Sanpete Valley Railroad.

The main tunnel is driven across the measures through the sand formation a distance of 2,700 feet to the coal; the entry running north from this tunnel is driven about 1,160 feet; the entry running south off this tunnel is in about 1,700 feet, and still in good coal, over five feet thick.

The management is so encouraged with the promising outlook of this entry that they have started a force of men in the rock tunnel and will continue to work there until they strike the main body of coal, which is some distance ahead of the tunnel.

This mine produced, during 1902, 7,901 tons of coal, consumed 5,000 pounds of powder. The average price of the coal per ton was \$2.00. The total value or selling price was \$16,014.00. Number of days worked was 305; number of men employed, 35; number of mules and horses, 3; no fatal accidents, and only one non-fatal.

Summary of wages paid by this company: Mine foreman, \$3.00 per day; miners, per ton (2,240 pounds to ton, with one-fourth off for slack), \$1.00; miners working by the day, \$2.50; timbermen, \$2.50 per day; trackmen, \$2.50 per day; drivers, \$1.50 per day; outside laborers, \$1.50 per day.

This mine is ventilated by natural ventilation and is, therefore, not as well ventilated as it should be.

My first official visit of inspection to this mine was on Jan. 6th, 1902, and I found the mine in a good condition, well timbered and kept damp by natural sources.

I made four other visits to this mine during 1902 and found it to be in a fairly good condition throughout the year, considering that it is ventilated by natural ventilation.

### THE EDMONDS MINE.

This was formerly owned by the Manti Coal Company, but during this year it was sold to the Sterling Coal & Coke Company, and has been worked by the lat-

ter company, all coal mined in this mine is taken out through the Thomas mine.

#### ABERDEEN MINE.

This mine is owned and operated by the Whittemore & Ballinger Company of Price, Utah, and is situated about eight miles northeast of Price.

During the year this mine produced about 800 tons of coal, and employs two men in the spring and fall months. They use each year about 300 pounds of powder and get \$1.50 per ton for their coal, which is used for domestic use in and around Price.

#### MILNER AND GILSON MINES.

These mines are owned by Milner & Gilson. They have opened some twenty prospects on their property and are still experimenting with their coke ovens.

They now claim that they can make good coke from the coal from their mines in Coal Creek and Dugout Canyons.

#### HUNTINGTON MINE.

This mine is owned by the Pleasant Valley Coal Company, who recently bought it from a New York Company, and is situated in the head of Huntington Canyon, thirteen miles east of Fairview, and has produced during 1902, 500 tons of coal. Number of days worked 200, number of pounds of powder consumed 200, number of men employed 5.

#### DESERET MINE.

This mine was formerly owned by the Deseret Coal Company, but was recently sold to the Kemmerer Coal Company of Wyoming, this company has bought during this year about 6,000 acres of coal land in this vicinity. This mine is worked under a lease by Thomas Reese of Wales, Utah. The production of this mine during 1902 is 300 tons, consuming 150 pounds of powder and employing 4 men.

### **CEDAR CREEK MINE.**

The Cedar Creek Mine is situated on Cedar Creek, about ten miles east of Huntington, and is owned and operated by the Cedar Creek Coal & Coke Company.

This mine works about three months during each year, and produced during 1902 350 tons, consuming 100 pounds of powder and employing two men. The average price per ton is \$1.50.

### **BEAR CANYON MINE.**

This mine is owned and operated by Don Robins & Company of Emery County. This company has opened some twenty other mines as prospects and has taken up about twenty-five thousand acres of coal land, in the lower end of Huntington Canyon. This company has opened up some of the finest coal in the country, for steam, coke and domestic purposes.

### **CASTLE VALLEY MINE.**

This mine is owned and operated by A. M. Johnson of Orangeville, Utah, and is situated about fourteen miles northwest of Castle Dale.

The production of this mine during 1902 was 550 tons, consuming 150 pounds of powder and employing 2 men. The price of coal at the mine is \$1.50.

### **FERRON MINE.**

This mine is owned and operated by the Ferron Coal Company, and is situated about fourteen miles north of the town of Ferron. There are several openings on this property, merely prospects. The company claims eleven sections of coal land in the head of Ferron Creek Canyon. All the openings are on an eight-foot vein.

The above small mines I have visited from one to three times during the year of 1902.

There are 113 other small mines in the State which are working from one to three months during each year, and the production from these mines is about 53,000 tons, consuming about 13,250 pounds of powder and em-

ploying 226 men 180 days. The selling price, at the mine, is \$1.50 per ton.

I visited all these mines with the exception of those located in Iron and Uintah Counties. My reasons for not visiting all these smaller mines are first; my time is limited; second, they do not come under the law.

### HYDRO-CARBON MINES OF UTAH.

This class of mine embraces the producers of gilsonite or pure asphaltum, extensive deposits of which have been discovered in the eastern portion of the State, principally in the counties of Uintah, Wasatch and Carbon.

As far as is known, no such deposits, approaching these either in extent or quality, have been discovered elsewhere in the world. Aside from the gilsonite, fissures of elaterite, ozokerite, wurtzelite and other hydrocarbons exist within these same localities, and are of such known extent and use as to place their value beyond mere speculation. Indeed, there is scarce a limit to the uses which these substances may be applied, nor does a doubt obtain as to their future value, while the possibilities are regarded as beyond computation. The larger deposits, however, of the last named mineral, lie within the boundary lines of Wasatch county.

But with reference to gilsonite, the value and extent of the deposits have passed beyond the interrogative, for the operations upon these minerals, though yet what might be termed a beginning, have demonstrated beyond question the permanency and quality of the material, and the output is met with an ever increasing demand; and while want of transportation facilities has been the greatest obstacle, the demand for the substance has overcome even this great difficulty, for during the year 1902 there was 3,500 tons of gilsonite produced in the State of Utah.

In the year 1862, in pursuance to an act of Congress, President Lincoln issued an executive order creating the Uintah Indian Reservation. Several years later, after the agency had been removed from the upper Duchesne to the present location on White Rocks and Uintah, the Indians discovered what they thought was

a vein of coal. Samples of this vein were taken to the then agent, Pardon Dodd, who discovered it was not coal, and knowing of no other use for the strange material, paid no further attention to it.

The first development of gilsonite was begun in the summer of 1888, and as this may be said to be the initial step in the production of hydro-carbons in Utah this will show the advancements in the production of this material in this state.

In 1885 some of the mineral or "wax" was found at the home of the ex-agent, Ashley, and was brought to Salt Lake City, where numerous analyses were attempted. Enough was learned that it was determined to prospect and locate the vein and afterwards make further determinations of the physical constitution and commercial value of the substance. Accordingly, early in January, 1896, locations were made, after which experiments were continued at Salt Lake City, but with indifferent success. Undiscouraged, however, Samuel H. Gilson was dispatched with some of the material to Washington, D. C., where at the Smithsonian Institute a scientific analysis was obtained, and the name "gilsonite" applied as technical distinction.

Afterwards, during the same year, it was discovered that the locations were just within the eastern boundary of the Uintah reservation. But still not discouraged by this discovery, the company set about to secure the restoration of the small portion of the reservation bearing the mineral to the public domain.

Success in this crowned their efforts, and on May 8th, 1888, a bill was signed to that effect. Development work was soon begun on a moderate scale, and some of the then limited product freighted to Price on the R. G. W. Railway, and thence shipped to eastern points, where experiments were prosecuted on a more extensive scale. A company had been organized at St. Louis for the handling of the product, and becoming convinced of the value and the ultimate demand, opened negotiations with the owners, and in the closing month of 1889 acquired possession of the property. During the year a considerable demand for the output had been created, and in the same year the efforts of the ever faithful, per-



sistent and ubiquitous prospectors resulted in the discovery of several similar but larger veins of gilsonite.

Since the restoration in 1888 of the "strip" containing the first discovered vein mining has been continued, and though the output must meet the expense of a wagon haul of more than ninety miles to Price, the product has steadily increased and is now being shipped to all parts of the world.

### THE GILSON ASPHALTUM COMPANY.

The Gilson-Asphaltum Company, St. Louis, are the owners and operators of this mine, which is situated about three miles southeast of Fort Duchesne.

This mine is employing at the present time fifteen men, as miners, who are paid \$2.50 per day of eight hours. They have seven six-horse teams, which are continually hauling from the mine. Besides this they employ all local teams they can, and still they cannot supply the demands of the market.

The method of mining this gilsonite is by means of a trench, which is necessary on account of the explosive nature of the gilsonite dust, and there being no water in the vicinity to keep the mine damp. The law forbids that any naked light be taken into the mine, and, therefore, until such time as they can put up machinery at the mine to furnish electric lights, or some other method of safety lighting, the mining of this mineral must necessarily be by means of trenching.

My first official visit of inspection to this mine was on May 28th, 1902. I found the mine in an unsafe condition; it was too dry and dusty, and on account of the dust being of a very explosive nature, I considered the mine in a very unsafe condition. I called the attention of the management to Section 8, Laws of Utah, 1901, relative to water systems in mines.

I also found the timbering all along the top in an unsafe condition. I instructed the mine foreman to repair the same immediately, so that no loose material could fall. On my next visit of inspection to this mine, October 8th to 9th, 1902, I inspected inside and outside of the mine and found that the management had used every effort to comply with my suggestions in regard to

bettering the conditions of the mine, which was, in general, in a good condition.

I suggested to the superintendent that he change the ladders from a perpendicular position to an angle of 45 degrees, so as to make it easier for the men to climb out of the trench. I instructed him to use no props for timbering that were smaller than six inches in diameter at the small end, and also in regards to the using of lights in and around the mine.

This is the only mine that has been producing gilsonite during 1902, and produced during the year 3,500 tons. The cost for mining this is \$2.50 per ton, and for freighting it to the railroad, \$15.00 per ton, making it \$17.50 on the railroad.

#### ELATERITE IN UTAH.

##### PARIETTE MINE.

This mine is owned and operated by the Gilson Asphaltum Company of Chicago, recently purchased from Culmer Bros. of Salt Lake City, and is situated about thirty miles south of Fort Duchesne.

The mine has been idle for the last two years, on account of a litigation, as part of their property is on the reservation, but on December 1st the new company started a force of fifteen men to work, and will be ready to ship gilsonite on January 1st, 1903. They have orders enough ahead to keep them busy for at least six months.

##### RAVEN MINE.

This mine is owned by the Raven Mining Company and is situated about fifty miles east of Colton, on what is known as Indian Creek. The company is working about fifty men prospecting, as they have leased from the government and the Indians several thousand acres of land, for the purpose of prospecting and mining elat-erite.

##### LEITER ELATERITE COMPANY.

This company owns several thousand acres of elat-erite land about six miles east of Soldier's Summit.

33 1 2 3 4 5 6 7

There has been very little work done on this property during 1902, as most of their time has been spent in experimenting on how to dissolve the material.

#### JONES, CURTIS AND WADE MINE.

This company owns about 500 acres of elaterite and other hydrocarbon properties situated about ten miles northeast of Soldier's Summit, and have had two men working on their property all year.

#### OZOKERITE IN UTAH.

The Summit Paraffin Mining Company of New York are owners and operators of S. P. M. Co. Mine, which is situated about one mile east of Soldiers Summit on the R. G. W. Railway. This company employs six men at their mine and have sunk a shaft about 300 feet deep and during this year they have produced three carloads of this ozokerite or "wax." During the year the company has built new refineries at the mine and will do their own separating from now on.

There are several other companies prospecting around this vicinity, but as yet have produced no ozokerite.

About three miles from Colton, to the northeast there are several small ozokerite mines, one company from Denver has put up a plant at their property, but have done very little work during the year.

#### ASPHALTUM IN UTAH.

The largest deposit of asphaltum is situated about seven miles east of Sunnyside. This property is owned and operated by Salt Lake and New York parties, they have had a small force of men working all through the year.

The vein of asphaltum is eighty feet thick and is a blanket vein. There are other smaller veins, fissures, on this property on which they are doing some prospecting.

We have other deposits of asphaltum in Utah, which are situated in Uintah, Wasatch, Emery and Wayne Counties.

Fees collected for inspection of coal and gilsonite mines and foremen and fire boss certificates:

Name and Location of Mine.	Amount Collected
Winter Quarters Mines, Scofield .....	\$ 70.00
Clear Creek Mine, Clear Creek .....	40.00
Castle Gate, Castle Gate .....	40.00
Sunnyside Mine, Sunnyside .....	80.00
Grass Creek Mine, Grass Creek .....	40.00
Wasatch, Coalville .....	40.00
Thomas, Manti .....	30.00
Gilson-Asphaltum, Fort Duchesne .....	20.00
Shell, Ephraim .....	10.00
Mine boss and fire boss certificates .....	11.00
Total .....	<hr/> \$381.00

#### FATAL ACCIDENTS OF 1902.

Jan. 24. On this date Richard R. Gibbs, a driver, was killed in Sunnyside Mine No. 2. At the time of the accident Gibbs was driving an empty car along the main back level, when he slipped off and fell beneath the car.

The car passed over him, breaking his neck and causing an abrasion on the face, chest and knee, causing instant death.

May 5. On this date James Locke, an elevator boy, was killed at the Castle Gate Mine.

At the time of the accident Locke was working near the elevator, that conveys the coal to the railroad cars, and in some unknown manner he was caught in the elevator and killed. His neck, both legs and left arm were broken.

May 8. On this date Israel Kumbola, a miner, was killed in the Winter Quarters Mine No. 1.

At the time of the accident Kumbola was working in his room, when some rock and coal fell from the roof, striking him and killing him instantly.

May 14. On this date Benj. F. Babcock, a pumpman, was injured in Winter Quarters Mine No. 5 by being struck by a runaway trip. Receiving a compound fracture of left leg and internal injuries, from which he died at St. Mark's hospital, Salt Lake, on May 16.

May 31. On this date Ieri Muanla, a miner, was killed in Clear Creek Mine. At the time of the accident

Muanla was at work in his room when a piece of rock fell upon him, striking him on the head, causing instant death.

June 27. On this date T. Nucci, a miner, was killed in the Clear Creek Mine, the time of the accident Nucci was at work in his room when a piece of rock fell from the roof, striking him on the head and shoulders, killing him instantly.

Nov. 6. On this date Thomas Birch, a miner, was killed in the Grass Creek Mine. At the time of the accident Birch was in the act of loading a mine car with coal when a rock, weighing about 500 pounds, fell from the roof, striking him on the head and shoulders, killing him instantly.

Nov. 19. On this date John Naskel, a miner, was killed in Winter Quarters Mine No. 1. At the time of the accident Naskel was at work in his room when some clod fell from the roof, striking him on the head, killing him instantly.

#### NON-FATAL ACCIDENTS OF 1902.

Jan. 28. On this date Charles Miles, a rope runner, was injured in Winter Quarters Mine No. 1. Miles was struck by a rapidly moving mine car, which broke his leg between the knee and ankle.

Feb. 25. On this date Edward Neilson, a driver, was injured in Winter Quarters Mine No. 1. At the time of the accident Warren was riding on a mine car, he fell off and the car passed over his left leg, causing fracture between ankle and knee.

Feb. 25. On this date Edward Neilson, a driver, was injured in Winter Quarters Mine No. 4. At the time of the accident Neilson was driving a horse down a steep room, the horse stumbled and Neilson's arm was caught between the shaft and the rib.

March 18. On this date Garino Grabile, (not in the employment of the company) was injured in the Clear Creek Mine. He had wandered into the mine without a light and was struck by a rapidly moving trip, causing dislocation of left hip.

April 16. On this date Richard T. Walker, a driver, was injured in Winter Quarters Mine No. 4 by falling in

front of a moving mine car, which passed over his left leg, causing a fracture between the thigh and knee.

April 16. On this date George Bedner, a driver in Clear Creek Mine, was injured by falling in front of a moving mine car, causing a compound fracture of the right leg below the knee.

May 26. On this date J. Gindercio, a miner, was injured in the Sunnyside Mine No. 1. At the time of the accident he was working in his room, when some coal fell from the roof upon him, causing fracture of the left leg in three places.

July 13. On this date David Curtis, a driver in the Sunnyside Mine No. 1 was injured by getting his arm caught between the car and a cap piece.

Oct. 10. On this date Steve Kmac, a miner, was injured in Winter Quarters Mine No. 1. At the time of the accident Kmac was loading a mine car with coal, when a piece of rock fell from the roof, striking him on the right wrist, breaking the small bone.

July 9. On this date Frank Chopping, a miner, was injured in Clear Creek Mine by being struck by a mine car, causing fracture of small bone in right leg.

Oct. 11. On this date Andrew Uriko, a miner, was injured in Winter Quarters Mine No. 1 by a piece of clod falling from the roof and striking him on the leg, causing fracture between knee and ankle.

Nov. 22. On this date Oscar Caski, a miner, was injured in Winter Quarters Mine No. — by a prop falling on him, causing broken rib on right side, right lung injured.

Oct. 25. On this date James Syme, a miner, was injured in the Stirling Coal & Coke Company's Mine at Morrison, by a piece of rock falling from the roof and striking him, causing dislocation of the hip.

Nov. 25.—On this date Hy. Naylor, a driver, was injured in Castle Gate Mine by getting his arm caught between the car and cap piece.

Nov. 26.—On this date John Bontti, a miner, was injured in Winter Quarters Mine No. 1 by a piece of coal falling from the roof and striking him on the head and shoulders, causing scalp wound and bruises on shoulder.

Dec. 6.—On this date William E. Ivie, a miner, was injured in the Sunnyside Mine No. 1. At the time of the

accident Ivie was holding an unexploded cap in his hand, when it exploded, causing loss of middle two fingers on left hand.

Dec. 18.—On this date A. O'Neil, a machine helper, was injured in the Sunnyside Mine No. 1. At the time of the accident O'Neil was working on the mining machine, when a piece of coal fell from the roof and struck him on the hand, causing loss of little finger on left hand.

Dec. 12.—On this date Alma Hardee, a driver, was injured in Castle Gate Mine No. 1. At the time of the accident Hardee was hauling a loaded coal car along the entry, when the car jumped the track and Hardee's foot was caught between the safety drawbar and the "gun," causing bruises on the left foot.

Salt Lake City, Utah,

July 21, 1902.

To the Hon. Heber M. Wells, Governor of the State of Utah:

My Dear Sir:—In accordance with your instructions, I visited the Daly West Mine and have the honor to report the result of my inspection of the most appalling disaster in metal mining in Utah.

Through the explosion on the 1200-foot level of this mine, thirty-four lives were lost by the explosion of a powder magazine and four men lost their lives by attempting to rescue those who were in the mine when the explosion occurred.

I was ready to leave Salt Lake City on the 16th inst., but on that day I received a telephone message from Mr. Wood, vice-president of the Daly West Company, advising me not to drive to the mine, as the work of rescuing those in the mine had been postponed until the next morning. I arrived at the mine at 11 o'clock on the 17th and found that they had taken out all the bodies but five, four of which were brought out in the afternoon of my arrival.

I made an inspection of the magazine and found it a complete wreck. From the amount of rock that had been run over, I would say that a large amount of pow-

der had exploded. As near as I can find out, there were between four and five tons of powder in the magazine. The appearance of the magazine and the conditions of it, as shown by a careful examination of the inside, the back part of which was a solid mass of clinkers, convinced me that at least 1,000 pounds of powder exploded, and these clinkers, made up of silica and iron, melted out of the solid formation, also convinced me that there must have been over four tons of powder which did not explode, but which burned, causing a tremendous heat. There was hanging from the roof and sides, deposited in the shape of icicles, five inches in length, melted out of the solid quartz, which goes to show that a very strong and continuous heat prevailed. A further proof of this intense heat is the great amount of gas generated in the mine, which made it impossible for human life to exist. This gas filled all the lower levels of the Daly West Mine and went out through the tunnel of the Ontario Mine, over a mile away, and killed four men by its deadly poison. We also found another man in the Ontario, more than a mile away from the explosion, killed by the deadly gas.

We also found, two miles away from the place of the explosion, a man and two horses killed by the effects of the gas.

There were twenty-six taken from the 1400 and 1500-foot levels who died from asphyxiation caused by the gas.

Two men were killed in the 1200-foot level, one of whom was found close to the shaft with his neck broken. The other was found about 350 feet from the magazine and about 900 feet from the shaft. His remains were lying thirty or forty feet in an old drift, off the tunnel, his legs, arms and head torn from his body. This man's duty was to deliver powder to the miners in their working places, and he also had charge of the powder house.

My opinion is that this man saw fire in the magazine and he immediately ran some distance before the explosion took place, as it was impossible for him to have been blown out this far along a tunnel which had one big bend and two caves between the magazine and where his body was found.



The cause of the explosion will always remain a mystery. We can imagine many ways in which it might have taken place. One is that the man in charge of the magazine was a smoker, careless with fire. He might have dropped fire from his cigarette or his candle in the sawdust, or a box of powder. There was no door to the magazine and the main tunnel was a travel way from the Daly West shaft to the upper part of the town, two miles distant. The explosion took place a little after changing time, 11:20 p. m., and it is possible some other man might have passed that way and accidentally dropped fire, which caused the explosion.

Two men were killed by the force of the explosion and thirty-two by asphyxiation.

Giant powder makes a large amount of after-damp or gas, which is commonly called white-damp, chemically known as carbonic oxide, the most dangerous and deadly poison.

Very little experience is needed to detect fire damp. This can be done with a safety lamp. Black damp very quickly makes its presence known by quenching a light.

With a white-damp a person can walk where it is without a candle giving any indication of its presence, until he falls insensible and death is the result. Three per cent of this gas mixed with atmosphere of the mine will cause death.

I am sorry to say that the rescuing party made a big mistake when they attempted to go down into the mine after the explosion occurred.

There was plenty of fresh air on the 900-foot level. The Daly-West shaft is a downcast. In place of going into the deadly poison they should have started on the 900-foot level and put up stoppings, preventing the air from going down to the 1,200-foot level. When this had been done they should have stopped all the air from going into the 1,200-foot level, and turned it all down the shaft. By so doing the rescuing party would have had plenty of fresh air and their lives, and undoubtedly the lives of many of the entombed would have been saved. There would have been no trouble in doing this had there been men present who understood the ventilation of mines. The air comes down through the Anchor mine into the 900-foot level with a strong current into the

Daly-West mine and the Daly-West shaft is a down cast.

I find that the majority of metal miners pay little attention to the matter of ventilation, which is very important.

The damage to the mine is very small. The number of deaths is very great. The accident was a terrible one.

I have made an examination of the mine after it had been cleared of all noxious gases. I went through all the drifts, stopes, tunnels, etc. I found the mine in good condition, well timbered and better ventilated than most metal mines are, for I have found a majority of them poorly ventilated and timbered.

I recommend that the underground magazines be discontinued and I would further recommend that a State law be enacted to that effect to protect the lives of the miners and also the property owners.

I have the honor to remain with great respect,

Sincerely yours,

(Signed.)

GOMER THOMAS,  
State Coal Mine Inspector.



1903

314015

# REPORT

OF THE

★  
COAL MINE INSPECTOR

FOR THE

STATE OF UTAH,

FOR THE YEARS 1903 AND 1904.

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314015

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Compendium v.

GOMER THOMAS  
STATE COAL MINE INSPECTION  
SALT LAKE CITY, UTAH

**REPORT**

**OF THE**

**COAL MINE INSPECTOR**

**FOR THE**

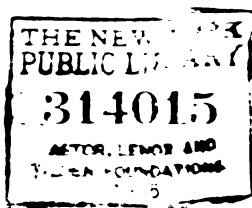
**STATE OF UTAH,**

**FOR THE YEARS 1903 AND 1904.**

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**SALT LAKE CITY**  
**STAR PRINTING COMPANY**  
**1905**





**REPORT**  
**OF**  
**STATE COAL MINE INSPECTOR**  
**FOR 1903.**

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**OFFICE OF THE STATE COAL MINE INSPECTOR,**  
**SALT LAKE CITY, UTAH,**  
**December 31, 1903.**

*Hon. Heber M. Wells, Governor of the State of Utah:*

Sir: In compliance with the requirements of the law of March 14, 1901, relating to report of Coal and Hydro-Carbon mines by the State Coal Mine Inspector, I have the honor to herewith submit to you the eighth annual report of the Department of Mines and Mining, State of Utah.

Respectfully yours,

**GOMER THOMAS,**  
State Coal Mine Inspector, for State of Utah.

The year 1903 was the most prosperous for all interested in mining of coal, of any year since mining commenced in Utah, and it would have been more prosperous had the strike not taken place in the last two months, as the loss in output of coal for these two months was over two thousand tons per day.

The production of coal in 1943 was 1,762,178 short tons, showing an increase of 127,742 short tons over the preceding year.

The amount of slate produced was 1,022,014 short tons, an increase of 24,439 short tons over the previous year. There was also produced in the state 1,510 short tons of Gilesonite, the value of which would be \$275,000 f. o. b. Price, and about 200 tons of Gilesonite in mineral wax, the value of which would be \$50,000 f. o. b. Soldiers Summit. There was also 1,000 short tons of Limestone produced, the value of which would be \$25,000 f. o. b. Price.

The amount of Asphaltenum I am unable to state, as I could not obtain the proper data.

The number of employees in and around the coal mines of the State was 11,821 and the average number of days worked was 287 days.

The number of men employed in and about the Hydro-Carbon mines was 183. The average amount of coal produced by each employee was 77 short tons. The above figures include all the men in and around the mines. The number of accidents for every 1,000 men was 3.7. The amount of coal mined for each day lost was 25,127 short tons.

The amount of coal & coke used was 2,343,767 tons, and the number of tons was 245,000 tons.

There were seven fatal accidents in and around the mines during 1943, being one less than in 1942. There were four killed by falls of rock, one by fall of coal, one by explosion of powder, and one killed by car in the outside. There were 15 non-fatal accidents in and about the mines in 1943 as against 18 in 1942, an increase of 17 which is not so great when the production of coal is considered. Besides a great many of these accidents were of a minor nature, that probably did not prevent the injured persons from working in more than a day or two.

It is also noted, in an article on the frequency of fatal accidents from falls of rock and coal, that there have been six persons in the accidents in 1943, were caused by falls of rock, that is, one less than the previous year. From these figures should not be reflected in least different from the fact that there was more against and falls of coal and rock and so on is a long time in regards to preventing the accidents in working the mines and of

what is called the dangerous gasses, fewer accidents would result. A strict rule should be made against the more dangerous falls of coal roofs and sides.

### VENTILATION OF UTAH MINES.

By careful examination of the weekly reports that come into this office every month, from each of the mines in Utah, it will be seen that the ventilation is up to the standard. The reports show that there was a minimum of 545 cubic feet per minute in circulation in each non-gaseous mine for each employee inside. The maximum in gaseous mines was 303½ cubic feet per minute and the average for all mines in the State was 424 cubic feet per minute for each employee inside. The above is not what our ventilating fans can do, as there are none of our ventilators run to their full capacity, as it is the aim of the inspector to see that there is not too much air, especially in the winter season, as it eats up the moisture and the dust becomes dry. Dust is our main source of danger. Though we have a system of sprinkling throughout the mines, if we allow too much air to enter the mine it becomes dangerous.

### UTAH FUEL IS GREAT.

It is a well-known fact that the State of Utah has enough coal in sight to supply Utah, the west and the southwestern States for generations, to come. The coal deposits extend in what is virtually an unbroken line, from the eastern Utah boundary near Grand Junction, in a southwesterly direction for nearly 200 miles into Arizona. from here we can trace it running north to Fish Creek on the west line of Carbon county. This coal crops out along the east side of Castle Valley from Gastle Gate to Grand Junction and on the west side of Castle Valley, from Fish Creek to Emery and down the Muddy Creek into Wayne County. There are four veins of coal from 4 to 30 feet in thickness, the veins lying almost flat, dipping to the north-west about two degrees. As far as prospected, these immense coal fields reveal the same high quality of product as characterizes the output of the great Utah mines now being operated. I must say that the coal resources of Utah

are inexhaustible. As to its cokeing qualities, it is equal to any west of the Missouri River, and is a coal that will stand a long haulage and also any climate.

There are tens of thousands of acres of the best coal in the State yet unlocated. The problem is at present to find a means of transportation and capital to develop the same.

**PRODUCTION OF COAL, COKE AND ASPHALTUM. IMPORTED,  
EXPORTED AND CONSUMPTION OF SAME  
IN UTAH FOR 1902.**

	Bituminous.	Coke.	Gilsonite.
Production in Utah .....	1,762,178	162,204	5,300
Imported into Utah .....	343,314	4,250	.....
<b>Total</b> .....	<b>2,105,492</b>	<b>166,454</b>	<b>5,300</b>
Export from Utah .....	817,954	48,661	5,300
Consumed in Utah .....	1,287,538	117,793	.....

**COAL PRODUCED IN THE SEVERAL MINES IN UTAH FOR 1903.**

NAME OF MINE	OPERATED BY	No. of Short Tons
Winter Quarters .....	P. V. Coal Company .....	392,150
Castle Gate .....	P. V. Coal Company .....	308,966
Clear Creek .....	P. V. Coal Company .....	459,002
Sunnyside .....	P. V. Coal Company .....	440,309
Aberdeen .....	Whittemore & Ballinger .....	550
Grass Creek .....	Grass Creek Coal Company .....	35,250
Wasatch .....	Weber Coal Company .....	31,161
Thomas .....	Sterling Coal & Coke Company .....	10,450
Huntington .....	P. V. Coal Company .....	630
Deeriet .....	Kemerer Coal Company .....	560
Cedar Creek .....	Cedar Creek Coal Company .....	350
Huntington Creek .....	Don C. Robbins, Agent .....	1,350
Anthracite Coal Company .....	Robert Addison Kirker, Agent .....	1,000
Castle Valley Mines .....	Robert Addison Kirker, Agent .....	10,400
Uintah Mines .....	Robert Addison Kirker, Agent .....	10,300
Other Small Mines .....	.....	64,700
<b>Total</b> .....	.....	<b>1,762,178</b>

TABLE SHOWING NUMBER OF TONS PRODUCED: NUMBER OF DAYS WORKED: NUMBER OF MEN  
EMPLOYED: NUMBER OF PERSONS KILLED AND INJURED, AND NUMBER OF  
POUNDS OF POWDER USED, ETC.

NAME OF MINE.	COUNTY.	Short Tons of Coal	Tons of Coke.	Days Worked.	Men Employed.	Fatal Accidents.	Non-Fatal Accidents.	Pounds of Powder.	Pounds of Dynamite.	Mules and Horses.	Steam Boilers.	Locomotives.	Coke Ovens.
Winter Quarters.....	Carbon.....	335,150	.....	280	380	1	15	93,450	.....	55	8	1	.....
Castle Gate.....	".....	303,986	66,805	270	450	2	5	.....	32,748	20	7	.....	204
Clear Creek.....	".....	459,002	.....	289	340	.....	4	144,93	.....	28	6	.....	.....
Sunnyside.....	".....	440,359	95,399	301	775	3	6	.....	40,647	35	10	1	300
Aberdeen.....	".....	550	.....	102	2	.....	.....	200	.....	4	.....	.....	.....
Grass Creek.....	Summit.....	35,250	.....	44	44	.....	1	14,750	.....	10	3	.....	.....
Wasatch.....	".....	31,161	.....	274	40	.....	3	7,075	.....	13	4	.....	.....
Huntington.....	Emery.....	630	.....	150	2	.....	.....	200	.....	1	.....	.....	.....
Deseret.....	".....	560	.....	100	4	.....	.....	250	.....	1	.....	.....	.....
Cedar Creek.....	".....	350	.....	95	2	.....	.....	100	.....	1	.....	.....	.....
Huntington Creek.....	".....	1,350	.....	150	10	.....	.....	500	.....	3	.....	.....	.....
Castle Valley S. Mines.....	".....	10,400	.....	90	10	.....	.....	1,600	.....	6	.....	.....	.....
Anthracite Coal Co.....	Iron.....	1,000	.....	160	6	.....	.....	350	.....	2	.....	.....	.....
Thomas.....	Sanpete.....	10,450	.....	300	25	1	1	2,000	3,000	3	1	.....	.....
Uintah Mines.....	Uintah.....	10,300	.....	170	22	.....	.....	2,150	.....	10	.....	.....	.....
Other Small Mines.....	.....	64,700	.....	170	90	.....	.....	3,500	.....	10	.....	.....	1
Total.....	.....	1,762,178	163,204	3,171	2,162	7	35	270,218	76,985	196	89	2	505

TABLE SHOWING TONAGE BY COUNTIES FOR 1903, COMPARED WITH 1902.

COUNTIES.	Tons For 1903.	Tons For 1902.	Gain.	Loss.
Carbon.....	1,596,927	1,523,387	69,640	.....
Summit.....	66,411	49,841	16,570	.....
Sanpete.....	10,450	7,901	2,549	.....
Emery.....	13,290	1,700	11,590	.....
Uintah.....	10,300	.....	10,300	.....
Iron.....	1,000	.....	1,000	.....
Other Small Mines.....	64,700	53,000	11,700	.....
Total.....	1,762,178	1,638,929	123,349	.....
Net Gain.....	.....	.....	123,349	.....



TABLE SHOWING PRODUCTION OF COAL IN UTAH DURING YEAR 1908, ETC.

Counties.	Total Pro- duction in Short Tons.	Total Pro- duction of Coke.	Average Per Ton.	Days Worked.	Employees No. of.
Carbon .....	1,506,027	162,204	81.20	252	1,027
Summit .....	60,411	.....	1.25	292	84
Manjola .....	10,460	.....	.....	300	25
Emery .....	13,280	.....	.....	117	28
Uintah .....	10,300	.....	.....	170	22
Iron .....	1,000	.....	.....	170	6
Other Small Mines .....	64,700	.....	.....	160	90
Total .....	1,769,178	162,204	.....	1,431	2,182

TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES IN OPERATION AND THE NUMBER OF  
DAYS WORKED IN 1902 AND 1903.

COUNTIES.	Number of Mines in Operation in 1902.	Number of Mines in Operation in 1903.	Gain.	Loss.	Average Number Days Worked in 1902.	Average Number Days Worked in 1903.	Gain.	Loss.
Carbon .....	25	58	33	.....	225	252	27	.....
Summit .....	10	10	.....	.....	229	262	33	.....
Sanpete .....	6	6	.....	.....	230	300	10	.....
Uintah .....	.....	34	34	.....	.....	170	170	.....
Emery .....	32	42	10	.....	200	117	.....	83
Iron .....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN THE STATE AND THE NUMBER OF EACH THAT WERE IN OPERATION DURING 1903

Country.	Number of Mines More than 6 Men.	Number of Mines which Employed Less than 6 Men.	Total by Countries	Number of Large Mines in Oper- ation in 1903.	Number of Small Mines in Oper- ation in 1903.	Total Number of Mines in Oper- ation in 1903.
Canada	1-12	50	50	1	58	59
Carbon		50	50	0	58	58
Monmouth		5	5	0	8	8
San Mateo		34	34	0	6	6
Utah		42	42	0	84	84
Idaho		42	42	0	42	42
Idaho		10	10	0	10	10
Idaho		10	10	0	10	10
Total			170			170

TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES  
IN 1903 COMPARED WITH 1902.

COUNTIES.	1902	1903	Gain	Loss
Carbon.....	1,091	1,927	.....	164
Summit.....	86	84	.....	2
Sanpete.....	35	35	.....	10
Uintah.....	.....	22	22	.....
Emery.....	10	28	18	.....
Iron.....	.....	6	6	.....
Small Mines.....	40	90	50	.....
Total .....	2,262	2,182	96	176

TABLE SHOWING NUMBER OF FATAL, SERIOUS AND NON-SERIOUS ACCIDENTS AND THE COUNTY IN WHICH THE SAME OCCURRED DURING 1903.

COUNTIES	Fatal	Serious	Non-Serious	Total
Carbon .....	6	10	20	36
Summit.....	.....	1	3	4
Sanpete.....	1	1	.....	2

TABLE SHOWING CASUALTIES OF 1903 COMPARED WITH  
1902.

COUNTIES	1902			1903				
	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	Gain	Loss
Carbon .....	6	15	21	6	30	36	15	.....
Summit.....	.....	1	1	.....	4	4	3	.....
Sanpete.....	.....	1	1	1	1	2	1	.....

**TABLE SHOWING THE NUMBER OF MINES EMPLOYING THE  
DIFFERENT METHODS OF VENTILATING AND THE  
KIND OF OPENING.**

Country	Character of Opening			Mode of Ventilation		
	Drift	Slope	Total	Fan	Furnace	Natural
Carbon .....	56	2	58	9	.....	49
Summit .....	8	2	10	2	.....	8
Emery .....	34	.....	34	.....	.....	42
Sanpete .....	4	2	6	.....	1	5
Uintah .....	34	.....	34	.....	.....	34
Iron .....	10	.....	10	.....	.....	10

TABLE SHOWING LOCATION, ETC., OF MINES IN UTAH.

NAME OF MINE	NAME OF OPERATOR	COUNTY	NAME OF SUPT.	P. O. ADDRESS	NAME OF RAILROAD
Winter Quarters No. 1	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R'y
Winter Quarters No. 4	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R'y
Winter Quarters No. 5	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R'y
Clear Creek	P. V. Coal Co.	Carbon	Wm. Forrester	Clear Creek	R. G. W. R'y
Castle Gate	P. V. Coal Co.	Carbon	David Crow	Castle Gate	R. G. W. R'y
Sunnyside	Utah Fuel Co.	Carbon	Joe. R. Sharp	Sunnyside	R. G. W. R'y
Aberdeen	Whittemore & Ballinger	Carbon	A. Ballinger	Price	R. G. W. R'y
Grass Creek	Grass Creek Coal Co.	Summit	W. L. Hansen	Coalville	U. P. R'y
Wasatch	Weber Coal Co.	Summit	T. J. Lewis	Coalville	U. P. R'y
Huntington	P. V. Coal Co.	Emery	Wm. Forrester	Clear Creek	R. G. W. R'y
Deseret	Kemmerer Coal Co.	Emery	Thos. D. Reese	Wales	R. G. W. R'y
Cedar Creek	Cedar Creek Coal Co.	Emery	Wm. Howard	Huntington	R. G. W. R'y
Thomas	Sterling Coal Co.	Sanpete	S. H. Keer	Manti	R. G. W. R'y
Huntington Creek	Don C. Robinson Coal Co.	Emery	D. C. Robinson	Salt Lake City	Sanpete Valley R'y
Anthracite Coal Co.	Anthracite Coal Co.	Iron	Robert Kerker	Salt Lake City	

**FEES COLLECTED FOR INSPECTION OF COAL AND GILSONITE  
MINES AND FIREBOSS CERTIFICATES.**

Utah Fuel and P. V. Coal Co., of Salt Lake .....	\$300.00
Grass Creek Coal Co., of Salt Lake .....	40.00
Weber Coal Co., of Salt Lake .....	40.00
Starline Coal and Coke Co., of Salt Lake .....	30.00
Summit Placer Mining Co. ....	10.00
American Asphaltum Co., of Chicago .....	30.00
Gilson Asphaltum Co., of St. Louis .....	30.00
Mine fireboss certificates .....	2.00
Total .....	<u>\$502.00</u>

**GOMER THOMAS,**

State Coal Mine Inspector.

## THE PLEASANT VALLEY COAL COMPANY AND THE UTAH FUEL COMPANY.

These companies own and operate five mines which are located in Carbon County. During 1903, these companies produced 1,595,470 short tons of coal and 162,204 short tons of coke; 1,155,118 short tons of coal were produced by the Pleasant Valley Coal Company mines at Winter Quarters, Castle Gate and Clear Creek; 449,359 short tons were produced by the Utah Fuel Company's mine at Sunnyside.

Fifty-five per cent of the coal mined and shipped by these companies is used in Utah, and forty-five per cent is shipped out of the State. Of the coke made, seventy-one per cent is used in Utah and twenty-nine per cent is shipped out of the State. Total selling value of coal mined by this company in 1903 was \$1,897,274.

The two companies employ approximately nineteen hundred and twenty-five men. The Pleasant Valley Coal Company and the Utah Fuel Company have expended \$170,526 for improvements for the year ending December 31, 1903.

In the several mines operated by these companies, there were six fatal accidents, and thirty non-fatal accidents during 1903.

### WINTER QUARTERS MINE.

This mine is owned and operated by the Pleasant Valley Coal Company and is situated about 116 miles southeast of Salt Lake and about a mile and a quarter from Scofield, on the Colton and Scofield Branch of the R. G. W. Railway.

No. 1 mine is worked by a drift and is ventilated by artificial ventilation, the power used for haulage is electricity, comprising one electric locomotive and three electric hoists. All main entries are lighted by electric lights.



The production of this mine during 1903 was 392,-150 short tons of coal, consuming 93,450 pounds of powder and employing 360 men and 55 horses, working 290 full days. The coal in this mine is all mined with picks.

Summary of wages paid at the Winter Quarters Mine: Mine foreman, \$125 per month; mine fire boss and shot inspector \$3.30 per day; miners, per ton, 65 cents; miners, per day, \$2.75; timbermen, per day, \$3.00; trackmen, per day, \$3.00; pumpmen, per day, \$2.75; engineers, per month, \$120 and \$80; drivers, per day, \$2.75; trappers, \$1.10; inside labor, \$2.75; outside labor, \$2.50 for eight hours' work. Mine superintendent, Thomas J. Parmley. Mine foreman, Henry Parmley.

On my first official visit of inspection to the Winter Quarters Mine No. 1, February 3, 1903, I found the mine in general in a good condition, all places well timbered, ventilated, watered and kept damp, mine working full time with 350 men employed inside, and 53 employed outside. Fan running at 142 rev. per minute, 78,780 cubic feet of air going in the mine and 89,562 feet at the outlet.

On my second visit, March 23, 1903, I went through the mine and found everything working all right and in a safe condition and the mine working full time, with 341 men employed on the inside, 51 on the outside. Fan running at the rate of 141 rev. per minute, 86,670 cubic feet of air in the in-take, and 89,100 cubic feet of air at the outlet.

My third visit of inspection was on April 6th, 1903. I am pleased to say that I found the mine well watered and all places kept damp, timbering in good condition and good ventilation. Will say that the mine is in a safe condition with 326 men employed on the inside and 46 on the outside.

My next visit of inspection was June 4th, 1903. I found the mine in about the same condition as on my last visit, with 310 men working on the inside and 40 on the outside: Fan running at a rate of 145 rev. per minute; 84,875 cubic feet of air going in the in-take; 85,775 cubic feet going out at the outlet.

My fifth visit of inspection was on September 10th, 1903. I found the mine as stated in the following letter:

“H. G. Williams, General Manager Utah Fuel and P. V. Coal Companies:

Dear Sir:—In accordance with Section 11 of the Mining Laws of Utah, 1901, I herewith submit to you my report of inspection of your mines at Sunnyside, Castle Gate, Clear Creek and Winter Quarters, for quarter ending September 30, 1903. I find the mines in general good condition. Good ventilation; well timbered and all places kept damp. I am pleased to inform you that I find a big change in the Winter Quarters Mine No. 1. On my last visit, September 10, 1903, I found the ventilation greatly improved and also the taking out of the pillars at present is far ahead of the old way. The mine in general is in a good condition, better than I ever saw it before.”

My last visit of inspection to Winter Quarters mine was on the last of December, 1903. I found 130 miners and 91 day men, a total of 220 in and around the mine. The total output on this date was 1,176 short tons of coal. As I went through the mine, I found it to be in a fairly good condition, taking everything in consideration.

I visited all the new men in the mine but four. I found all satisfied with the exception of two or three. The condition of this mine is different from all the others. It has a big seam of coal and lots of poor roof, which makes it a very hard proposition for the management to handle the new men that are not accustomed to mining coal. But I must say that the management uses more precautions here than at the other mines. Here they put one practical miner to every four new men. They do this throughout the mine. By doing this they produce quite a tonnage of coal with a very small percentage of accidents. After going through the mine I examined the scales and found them to be correct.

I made several other visits to this mine during the year, which were not official. The output of this mine has been greatly reduced on account of the union, or those in favor of the union demanding recognition, and the company refusing the demand. Those in favor of the union (which numbered about one-half of the men employed) quit work. The majority of those that stayed out were foreigners. On this account, the output has been reduced to less than one-half for the last two months.

On November 23, the Governor ordered the State National Guard out to the Carbon County Mines. On the morning of the 25th, they arrived at Scofield. The troops were ordered to Scofield by a unanimous request of the people of Winter Quarters, Scofield and Clear Creek.

On the 20th and 21st of November, the English-speaking element of Winter Quarters, Scofield and Clear Creek formed a Citizens' Alliance. On Monday night of the 23rd there were nearly 1,000 members joined and at this meeting passed resolutions condemning the agitators and pledging the citizens to aid in keeping the mine open.

They also requested the Governor to send troops to protect them while going and coming from work and also their families while they were at work, as there had been threats made by the foreign element to destroy the property and to do bodily harm to those that were working. In my opinion, if the troops had not been sent to Scofield there would have been trouble on that day, as everything was right for a riot and with the aid of the company guards the mine has been kept running, producing nearly half of the normal amount.

Nos. 4 and 5 mines have been abandoned during 1903. Improvements made at these mines during 1903 amounted to \$8,167. During the year the company has built a new modern hospital at Winter Quarters which would be a credit to any mining camp.

#### CLEAR CREEK MINE.

This mine is owned and operated by the Pleasant Valley Coal Company, and is situated about six miles south of Scofield on a branch of the R. G. W. R. R. The output of this mine during 1903 was 459,002 short tons of coal, at a cost of \$1.15 per ton. Total value of product \$530,329, consuming 144,093 pounds of powder, employing 340 men and 23 horses. Mine worked 299 full days. This mine is worked by a drift and has artificial ventilation, being ventilated by a fan which produces 84,578 cubic feet of air per minute at the intake and 85,932 cubic feet at the outlet. All haulage is done by means of a tail rope. The pumps are run by compressed air.

Summary of wages paid at Clear Creek Mine: Mine foreman, \$125 per month; mine fire boss and shot inspector, \$3.00 per day; miners, per ton, 65 and 80 cents for 2240 lbs. to the ton; miners, per day, \$2.75; timbermen.

per day, \$3.00; trackmen, per day, \$3.00; pumpmen, per day, \$2.75; engineers, per day, \$3.00 and \$3.50; drivers, per day, \$2.75; trappers, per day, \$1.10; inside labor, \$2.75; outside labor, \$2.50. Mine superintendent, Wm. Forrester. Mine foreman, James Fussel. Assistant Mine Foreman, T. W. Thomas.

The above scale of wages has been increased since the 1st day of November, 1903.

My first official visit to the Clear Creek mine was on the 18th of June, 1903. I found the mine in a good condition, all places watered and kept damp, timbered and well ventilated. Mine working full time with 285 men employed on the inside, 42 on the outside.

My second official visit was from March 19th to 22nd. On this date I found the mine to be in a fairly good condition, with the exception of the ventilation in the main dip. It was not as good as I would like to see it.

My third official visit of inspection to this mine was on the 21st of April. On this date I visited the mine and found it to be in a little better condition than on my last visit, all places being well watered, kept damp, timbered and ventilated. Will say that the mine is in a safe condition. Mine working full time, with 237 men on the inside, 33 on the outside. With 80,685 cubic feet of air passing in the mine at the in-take and 90,861 at the outlet. I made my fourth visit on May 10th and found the mine in about the same condition as on the above visit. Mine working full time with 227 men on the inside and 30 on the outside. I made my fifth visit of inspection on June 24th, 1903.

On this date I went through the mine and found everything in a very good condition in regards to ventilation, timbering, all places being watered and kept damp. Mine working full time with 250 men on the inside, 40 men on the outside, with 84,670 cubic feet of air going in the mine at the in-take, 85,281 at the outlet.

I made several other visits to this mine during the months of September, October and November, which were not official visits. I found the mine on each visit in general in a good condition.

On my sixth and last official visit to this mine, which was in the last week in December, I found the mine working full time, working 220

If he had put up the props, in my opinion the rock would have been safe, as there was no other loose rocks around. There were plenty of props in the room close by. I must say that this is one of those accidents caused by the carelessness of the miner.

My eighth official visit was on November 27th. On this date I found the mine had been shut down seven days. The Italian element came out on strike so the mine closed down.

I made another visit about the last of December. I found 146 miners working, 92 day men, total 238, working in and around the mine. The output was 580 tons per day. As I went through the mine I found it to be well timbered, ventilated, watered and kept damp. Here the condition as regards the new men, is not quite the same as at the other mines, as the coal is hard to mine and it takes nerve and muscle to produce the coal. The farmer, rockmen and railroad men are not accustomed to use their nerve and muscle in this way, so it is taking a little longer to train them. It takes a good pickman to make a success of digging coal at Castle Gate. Taking all these things into consideration, the new men are doing very well, as we see 146 miners are producing 580 tons per day. The company uses the same precautions here as they do in Sunnyside in regards to practical miners taking care of the new men.

### SUNNYSIDE MINES NOS. 1 AND 2.

These mines are owned and operated by the Utah Fuel Company and are situated about seventeen miles east of Mounds, on a branch of the Rio Grande Western Railway.

No. 1 mine is worked by a slope. Haulage is done by steam and horses. The power used in taking the water out is compressed air. Artificial ventilation by fan, producing 51,460 cubic feet of air at the intake, 55,335 at the outlet.

No. 2 mine is a drift. Haulage is done by electric locomotive and two electric hoists. The mine is ventilated by artificial ventilation. Fan producing 53,130 cubic feet of air per minute at the intake, 66,675 at the outlet.

Summary of wages paid at the Sunnyside mines is as

follows: Mine foreman, \$125 per month; fire bosses, \$3 per day; miners, per ton, for run of mine, 55 cents for 2,000 pounds of coal to the ton. This change was made on the first of November. Up until the first of November, they were paid for 2,240 pounds to the ton. Now they are paid the same price for 2,000 pounds. Miners, per day, \$2.75; timbermen, per day, \$2.75 and \$3.00; trackmen, per day, \$2.75 and \$3; pumpmen, per day, \$2.25; engineers, per day, \$3; drivers, per day, \$2.75; trappers, per day, \$1.10; inside labor, \$2.75; outside labor, \$2.50. The above employes received 10 per cent advance on the first of November. Mine superintendent, J. R. Sharp; mine foreman No. 1 mine, John Crawford; assistant, David Vaughn. Mine foreman No. 2 mine, James Harrison; assistant mine foreman No. 2, Robt. Williams.

With the care the company has taken, the town of Sunnyside has a modern appearance. It has 118 five and six room cottages and 20 two-story houses, 10 double houses and one commodious company boarding house, the latter for the accommodation of single men. The price of board is 75 cents per day. There are three other hotels owned by private parties, and about half as many houses owned by the miners as by the company.

There are a great many tents in use, as it has been impossible to put up houses fast enough to accommodate the demand. There are two hospitals, one new modern hospital put up by Peabody and Palmers donation. This one is equal in its requirements to all necessities and furnishes the best of modern care and surgery. The company has a large modern office and also a large company store. The company has invested during 1903 in improvements, \$136,653, in building coke ovens and other new buildings. The company had intended to invest \$300,000 more if the strike had not taken place in the month of November. Now it is hard to tell what they will do, as the strike has delayed them in their business and has cost them a large amount of money. Sunnyside is the "Queen Coal Camp of the West," as its prospects ahead are bright, on account of the coal being of a superior quality for coking. As the demand for coke in the west and northwest will increase, the company will increase their coke ovens to fill the demand, so Sunnyside will be one of those camps that

will work the year round, and as to climate "Sunnyside can't be beat."

The output of the Sunnyside Mines Nos. 1 and 2, for the year 1903, is as follows: Coal, 440,359 short tons. Average price per ton at mine, \$1.19. Total selling price of the product, \$525,892; 95,399 short tons of coke were produced. Number of days worked, 301. Number of men employed in and around the mine, 775; Number of fatal accidents, 4. Serious accidents, 6. Number of pounds of high explosives, 40,647 pounds of dynamite. Number of horses, 35. Number of steam boilers, 10. Number of locomotives, 1. Three hundred coke ovens.

My first official visit to these mines was on February 9, 1903. I went through both mines and found them in a good and safe condition, working full time.

My second official visit to these mines was on March 5, 1903. I went through both mines and examined the main haulage ways, finding them well timbered, watered and kept damp. Both mines working full time.

My third official visit to these mines was on April 29, 1903. I went all through both mines and found them well watered, all places kept damp, timbering in a good condition and good ventilation. Will say the mines are in a safe condition.

My fourth official visit to these mines was on June 10, 1903. I did not go through the mines, merely examined the scales that weigh the miners' coal and also examined the fireman's, waterman's and shot inspector's reports.

My fifth official visit of inspection to these mines was on August 12, 1903. I went through mine No. 1 and found it to be in a fairly good condition. During this visit I found several small feeders of carburetted-hydrogen gas. The quantity was too small to be dangerous. I find the mine well watered, timbered and good ventilation. Fan running at the rate of 44 revolutions per minute, producing 56,400 cubic feet of air at the intake, 58,025 cubic feet of air at the outlet. Mine working full time with 151 men on the inside. The following day I went through No. 2 and found it in a fairly good condition. As I came out to the office, I examined the fireman's, waterman's and shot inspector's reports and found them to be correct. I also ex-

amined the scales that weigh the miners' coal and found them to be seven pounds in favor of the miners.

My next official visit of inspection to these mines was on October 11, 1903. I found both mines in about the same condition as on my previous visit.

On November 20, 1903, I made another visit to the Sunnyside mines by request of the Governor to see and inquire into the condition of the strike, which you will see in other parts of this report.

My eighth visit of inspection to these mines was on December 26, 1903. I visited Nos. 1 and 2 and found all places well ventilated, timbered, watered and kept damp. By request of the Governor, I made a report of this visit, of the condition of the mines and the new miners, as nearly all of the employees who had started since the strike were inexperienced men. You will find a full report of this visit in other parts of the this report.

### GRASS CREEK MINE.

This mine is owned and operated by the Grass Creek Coal Company, of Salt Lake City and is situated nine miles southeast of Echo, on a branch of the U. P.

The mine is worked by a drift, and is ventilated by artificial ventilation, a ten foot fan being used. This mine produced, during the year of 1903, 35,250 short tons of coal, consuming 14,750 pounds of black power. Number of days worked, 250. Number of men employed, 44. One non-fatal accident. Number of steam boilers 3, and 10 horses.

My first official visit of inspection to this mine was on January 5, 1903. I went through the mine and found it in a very good condition with the exception of timbering. There was not as much timber as I would like to see in the mine.

My second official visit of inspection was on April 14, 1903. I found the conditions about the same as on my previous visit, with the exception that the timbering was greatly improved. Mine working full time with 50 men on the inside and 8 on the outside.

My next official visit of inspection to this mine was on August 25, 1903. I went through the mine and found



good ventilation and all places wet and damp by natural moisture, timbering in a fairly good condition, with good ventilation.

My fourth visit of inspection to this mine was on September 25, 1903. Mine working every day, all places well timbered, with good ventilation.

My fifth official visit of inspection to this mine was on October 20, 1903. I found the mine in about the same condition as on my previous visit.

My next visit to this mine was on December 15, 1903. I went through the mine and found everything working smoothly, with 78 men in and around the mine. I found the mine in a good and safe condition.

Summary of wages paid at this mine: Mine foreman, \$90 per month; miners, per ton for run of mine, 40 cents; miners, per day, \$2.50 and \$2.75; timbermen, per day, \$2.75; trackmen, per day, \$2.75; drivers, per day, \$2.50; pumpmen and engineers, per day, \$2.75; inside laborers, per day, \$2.50; outside laborers, \$2.25. Mine superintendent, W. L. Hansen. Mine foreman, William Wilde.

### WASATCH MINE.

This mine is owned and operated by the Weber Coal Company of Salt Lake, and is situated about three miles east of Coalville on a branch of the Union Pacific Railroad. The mine is worked by a slope and is ventilated by a ten-foot fan, running at the rate of 120 revolutions per minute, 28,080 cubic feet per minute at the intake, 29,610 at outlet.

The mine employs 40 men and 13 horses. During 1903 the mine produced 31,160 short tons of coal, consuming 7,075 pounds of powder. The average selling price per ton is \$1.29 2/3, the total selling value \$40,415.39.

Summary of wages paid: Mine foreman, \$2.75 per day; miners, per ton run of mine, 33 1/3 cents per ton for 2,000 pounds; miners, per day, \$2.25; timbermen, per day, \$2.25; trackmen, per day, \$2.25; pumpmen, per day, \$2.00; engineers, per day, \$2.25; drivers, \$2.00; outside laborers, \$2.25; blacksmith, \$2.50 per day. Mine superintendent, T. J. Lewis; Mine foreman, Samuel Clark.

My first official visit of inspection to this mine was on January 6, 1903. Went through the mine and found it

in a fairly good condition, all places well timbered, with good ventilation. The main entry for about 1,000 feet was a little dry.

My second official visit to this mine was on April 13, 1903. I found the mine in a good condition, all places well timbered, watered and kept damp, with fairly good ventilation. Mine working full time, with 37 men in and around the mine, 24,120 cubic feet of air per minute going in the mine at the intake, 25,830 at the outlet.

I made three other visits to this mine during the year, and found the mine in about the same condition as on my other visits.

### THOMAS MINE.

The Thomas Mine is owned and operated by the Sterling Coal & Coke Company of Salt Lake City, and is situated about two and one-half miles east of the town of Sterling, at the terminus of the San Pete Valley Railway. This mine is closed down at present, on account of an injunction served on account of water that comes out of the mine. The output of this mine was 10,450 short tons, working 300 days, employing 25 men. Number of accidents, one fatal and one non-fatal.

Summary of Wages: Mine foreman, \$3 per day; miners, per ton (2,240 pounds to the ton with one-fourth off for slack), \$1; miners working by the day, \$2.50; timbermen, \$2.50; trackmen, per day, \$2.50; drivers, per day, \$1.50; outside laborers, per day, \$1.50. This mine is ventilated by natural ventilation and is, therefore, not as well ventilated as it should be.

My first official visit of inspection to this mine was on January 13, 1903. I found the mine in good condition, well timbered, and kept damp by natural means.

My next official visit was on March 30, 1903. The following is a report of this visit to the management:

H. S. Kerr, Superintendent Sterling Coal & Coke Co.,  
Manti, Utah:

Dear Sir:—In accordance with Section 11 of the Coal Mining Laws of the State of Utah for 1901, I herewith

hand you my official report of inspection of your mine March 30, 1903. I examined your mine and found it to be in a fairly good condition, with the exception of the ventilation which was not as good as I would like to see it. I also found too much powder stored in one place to be safe. Enclosed you will find instructions for the handling of powder in the future.

All places were well timbered and safe. Hoping that you will see the enclosed instructions will be carried out,

Yours very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

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April 4, 1903.

Sterling Coal & Coke Company, Salt Lake City, Utah:

In accordance with Section 10 of the Coal Mining Laws of the State of Utah for 1901, in regard to the handling of explosives, which reads as follows:

"Gun powder or any other explosives shall not be stored in a mine, and a workman shall not have at any time in any place more than one can or box containing six and a quarter pounds of powder, provided that under special conditions a larger amount may be allowed in a mine for immediate use, when approval of such action is made in writing by the State Inspector."

In accordance with the above, I here issued a special order to the Sterling Coal & Coke Co. that you are instructed to take into your mine fifty pounds of powder for use in twenty-four hours in the rock tunnel, in your mine at Sterling, Sanpete County, Utah, and the same to be placed in a box which must be locked except when in use. The caps for the same must be placed 50 feet away from the powder. The above instructions must be carried out.

GOMER THOMAS,  
State Coal Mine Inspector.

My next visit was on April 8, 1903. I was called to investigate the place of accident where John Thompson, Jr., was killed. Thompson came to his death in the Morrison mine, near Sterling, San Pete County, Utah, on the evening of the 6th day of April. About 11 o'clock I received a telegram from the management of the Sterling Coal & Coke Company, stating that John Thompson Jr. had been killed by an explosion of giant powder in their tunnel at 7:30 on the evening of April the sixth.

Owing to the lateness of the message, it was impossible for me to go on the 7th as the train leaves at 8 a. m., so I was delayed until the 8th. I arrived at the mine at little after 2 p. m. and found that nothing had been moved from the places of accident except the body, which was taken out the evening of the accident and an inquest was held over the body at a very late hour on the same evening on which the accident occurred. The report of the coroner's jury was that he came to his death through injury received by his own hands. I looked over the place of accident and saw where the body lay, about thirty feet from the box in which the powder is kept. I got Mr. Livingston and Mr. Simes, his two partners, who were working with him in the tunnel, to look over the ground with me. The following is the testimony that they gave me: They were all working on the afternoon shift, and about 7:15 p. m. they had a round of holes ready to be charged with powder. Mr. Livingston gave John Thompson instructions to go back to the powder box to get a round of powder, which was partly made ready by the day foreman. The powder was 700 feet out on the tunnel and about 100 feet in an old level. I questioned the two men in regard to the amount of powder that was in the box when they went on shift. The answer was that there was a fifty-pound box of powder and about 5 or 6 sticks left of the other box, so when Thompson went back to get the powder, he went to open the box to make up his rounds of powder, as the few sticks that were left over from the other box were not enough. As he took the powder out of the box, he placed it in a brass bucket which he placed on his arm. He had left the box and gone about 25 feet. Here his dead body was found with the brass bucket still on his arm, flattened out. Neither the powder nor the caps in it had gone off, but were flattened in the bucket. The fuse and caps were torn out of

the powder. They further swore that there was no light or fire nearer than 700 feet to the powder except the one that Thompson had. All of the above was given me by Thompson's partners, Livingston and Simes, who were working with him at the time of the accident.

I am of the opinion this accident was one of the many for which we cannot account. We can imagine many ways in which it might have taken place. One is that Thompson was a smoker, careless with fire, and might have dropped fire from his cigarette or lamp in the sawdust or powder. To be just with all concerned, I cannot call this anything but a pure accident.

I made two other official visits to this mine and found the mine in a fairly good condition.

### ABERDEEN MINE.

This mine is owned and operated by the Whittemore & Ballinger Company of Price, Utah, and is situated about eight miles northeast of Price.

During the year this mine produced about 550 short tons of coal, and employed two men and four horses. Average days worked, 102, consuming 200 pounds of powder. This coal is hauled eight miles by wagon into Price and sold for \$3.00 per ton for domestic use. The company owns 160 acres of coal land with four veins of coal on, the largest being 20 feet. The way of mining this coal at present is as follows: The two men employed, with a four-horse team, leave Price in the morning and drive to the mine. They take their wagon with three beds and drive into the face of the mine and load up their wagon with fifty or fifty-five hundred on and return to Price the same day.

### HUNTINGTON MINE.

This mine is owned and operated by the Pleasant Valley Coal Company, and is situated in the head of Huntington Canyon, thirteen miles east of Fairview and has produced during 1903, 650 short tons of coal. Average days worked, 150, employing 6 men, consuming 200 pounds of powder.

### DESERET MINE.

This mine is owned by the Kemmerer Coal Co. of Kemmerer, Wyoming, and is operated under a lease by Thomas Reese, of Wales, Utah. The production of this mine during 1903 was 560 short tons of coal. Average days worked, 100. Men employed, 4, consuming 250 pounds of powder. This coal from this mine is hauled by wagon into Sanpete Valley and sold for domestic use.

### CEDAR CREEK MINE.

This mine is owned and operated by the Cedar Creek Coal & Coke Company and is situated on Cedar Creek about ten miles east of Huntington. This mine works in the spring and fall and supplies the small towns in the north end of Castle Valley. The output during the year 1903 was 350 short tons of coal. The average days worked were 95. Number of men employed, two. Powder consumed, 100 pounds. William Howard, of Huntington has charge of this property.

### HUNTINGTON CREEK MINE.

This company has some 1,200 openings on the Huntington Creek, each side of the canyon. The line of their property starts about ten miles north of the town of Huntington and running north a little beyond the canyon. The Huntington Canyon coal field, for which Don C. Robbins is agent, is one of the largest and choicest coal fields in Utah. This company controls the inlet to Huntington Canyon, Cedar Creek and a portion of Cottonwood Canyon. Over 400 new openings have been made during the year of 1903. There have been some 1670 short tons of coal taken out by this company and sold in Castle Valley.

### CASTLE VALLEY SMALL MINES.

These mines are owned by several different parties. A. M. Johnson, of Orangeville, Utah, who has a mine up Cottonwood Canyon, is continually working it and supplies the town of Orangeville with coal.

### FERRON COAL COMPANY.

This company has some 10,000 acres of coal land about twelve miles up Ferron Creek from the town of Ferron. They have several openings with an eight-foot vein of beautiful coal. There are other companies such as Williams & Company, which has several openings up on Muddy Creek. This company owns about 10,000 acres. The Kemmerer Coal Company, which has several thousand acres up Queatch-up-pah Creek, the Utah Fuel Company which has a large tract of land in this vicinity. There are two or three mines down in the valley on Muddy Creek that furnish coal for the town of Emery.

### THE ANTHRACITE COAL CO.

This company owns and operates coal mines in Iron and Washington Counties. They have several shafts and tunnel openings. The shafts and tunnels are well timbered and are worked with safety and in a workmanlike manner. The veins on these properties are a little over four feet thick and dip at an angle of 60 degrees. The coal is of a semi-anthracite. If the development work on this property should be successful, it will be of great value to the State of Utah, as it is the only field of semi-anthracite that has been found so far in the State of Utah.

### MILNER AND GILSON COAL COMPANY.

This company has several thousand acres of coal land, from ten to twenty miles north and northeast of Price. They have some 300 openings on this property, showing veins of coal from four to twenty feet. They

have built a small coke oven at Price for experimenting with the coal from these fields. They claim that they can make a good quality of coke from the coal taken out of the above openings. The most of the openings are on Coal Creek, Dugout and Soldiers Canyon. This company has shipped several cars of coal into Salt Lake City and has made a success of the same. Sam Gilson of Salt Lake is in charge of this property.

### GILSON ASPHALTUM MINE.

The Gilson Asphaltum Company, of St. Louis, is the owner and operator of this mine, which is situated about three miles southeast of Fort Duchesne.

This mine produced during 1903, 4,000 short tons of Asphaltum, the value of which would be \$200,000 on car at Price. Thirty men are employed. Miners are paid \$2.50 per day for eight hours work. This company hauls the product to Price, nearly 100 miles. The method of mining has been changed at this mine from the trench mining to crosscutting, leaving pillars every 50 feet and timbering in between. The means of lighting is electricity. The dust from this source is of a very explosive nature. The law forbids any naked light to be taken into the mine. This is why the work is done by electricity. On my first official visit of inspection to this mine, on May 1 and 2, 1903, I went through the mine and found it fairly timbered but not quite as good as I would like to see it. I again called the foreman's attention to the fixing of the ladders in a little better shape. I found lots of dust in the mine. I was pleased to see that the miners are staying with my instructions in regard to lights and smoking in and around the mine, as this is our only safeguard at present. I hope they will continue to do so. On the above date, we also met as a board of examiners and we gave George Stewart a certificate for mine foreman. I suggested that he be appointed mine foreman of this mine, as it is unlawful to run the mine with a mine foreman who does not hold a certificate. As the company was running the mine without a certified foreman, it was contrary to law.



In answer to a letter from Mr. Harden Bennion, lessee of this mine, in regard to Gilsonite Mine, I wrote as follows:

Salt Lake City, Utah, September 18, 1903.

Mr. Harden Bennion, Vernal, Utah:

Dear Sir:—In answer to yours of August 22nd, in regard to Gilsonite mine and foreman, will say that I told Mr. Lee that I was going to write you a letter, as he told me that you were employing a foreman who did not hold a certificate. He also said that you were employing more than six men. Now if this is so, you have been violating the law, as you will see on page 16, Section 14 of the Coal Mining Law of the State of Utah, for 1901. If you will look up this Section, you will see that you will be held responsible in case of any accident. If you are employing more than six men, I will try and be there before you get through with your contract. Hoping this will be satisfactory, I remain,

Your truly,

GOMER THOMAS.  
State Coal Mine Inspector.

My next visit of inspection to this mine was on September 28 and 29, 1903. I went through the mine and found everything in about the same shape as on my previous visit.

My next official visit of inspection to this mine was on November 6 and 7, 1903. I went through the mine, both old and new workings, and found the timbering in about the same condition as on my former visit. The shaft has not been timbered and made safe, so that you can go down any further without retimbering, so I notified the management that from here down they must start with a new system. I suggested that they timber the shafts with square timber with close laggings all around and also put in a set of stulls within two feet of the shaft timber on each side of the shaft so that in case the workings should cave in it will prevent the rocks from rolling against the shaft timber and breaking them. I also suggested that they leave a block of Gilsonite between the new and old workings and one every fifty feet as you go down. The size of these

blocks will have to be determined by the ground you go through. I don't think in any case that these blocks should be less than ten feet thick. I also called their attention to Section 8 of the Mining Laws of Utah, of 1901, as we must do away with the dust.

This company owns a large tract of Gilsonite land on White River on the line of Utah and Colorado. They have been employing about 60 men all summer and fall prospecting the new field. They have a big vein of gilsonite running through their property. There has been thousands of dollars spent in building wagon roads from their mines to a point on the Rio Grande Western Railroad. They are also building a railroad branch of the R. G. W. to the mine. They have a large force of men working part of the summer and all fall on the same. Their intention is to have the railroad completed some time in 1904. There are other companies in the same district. When the railroad is completed, there will be a big increase in the output of gilsonite.

### PARIETTE MINE.

This mine is owned and operated by the American Asphaltum & Rubber Co., of Chicago, and is situated about thirty miles south of Fort Duchesne. The production of this mine during 1903 was 1300 tons. The value of the same would be, on board of cars at Price, \$65,000. There have been employed during the year 20 men. This mine has been greatly improved during the last year. For the last 130 feet in the shaft the vein has increased to nearly three feet, with a good quality of number one gilsonite.

My first official visit of inspection to this mine was on May 2, 1903. I went through the mine and found it to be in a fair condition, well timbered and kept damp. I examined the place where Harrison Russel got hurt and found it to be in a damp condition and from the information I got from Mr. Russel and his partner, who was working with him at the time of the accident, it seems to me to be a pure case of carelessness on the part of Mr. Russel in not obeying orders and rules of the mine. In order to be safe in the future, in case of meeting a dry place in the vein, I suggested that safety lamps be used. I sent them



condition, well-timbered and ventilated. I called the attention of the management to Section 7 of the Mining Laws of Utah in regard to an escapement way as I find there is only one opening to the mine. I therefore suggested that they make the second opening as soon as it was possible to do so. I called their attention also to the above section in regard to inflammable structures as the buildings as they stand now are not according to the law, I therefore gave them six months to fix the buildings, also to take the blacksmith shop out of the building that is now surrounding the shaft. I further instructed them to build a water tank that would hold four or five thousand gallons of water. There is not near enough water in case of fire. My instructions was to do this as soon as possible as the conditions as they now are are not safe.

My next visit of inspection to this mine was on September 16, 1903. I made an inspection of this property and found the same to be in a good, safe-working condition.

On my next visit the property was lying idle, but has since started up. There are several other companies prospecting on the ozokerite veins near Colton, but are not producers as yet.

### RAVEN MINE.

This mine is owned and operated by the Raven Elaterite Company. The mines are situated about 50 miles east of Colton on what is known as Indian Creek, on the reservation. The company is employing 25 men. They produced during the year 1,000 short tons of Elaterite, the value of which would be about \$45,000 on board cars at Colton.

There has been very little done with our Asphaltum mines during 1903.

### UTAH OIL FIELDS.

Everything in the Utah oil fields has been a little quiet during the year up until November, when there was a small boom in Sanpete County near Mt. Pleasant. The Mt. Pleasant Oil and Gas. Co put in machinery and started

drilling. When down 540 feet they struck a small quantity of oil of a fine quality and were greatly encouraged. They are still working.

The Farmington Con. Oil and Gas Co. are doing some very fine work near Farmington. They have taken up some 16,000 acres of land as placer claims in Farmington Mining District, Davis County. The officers of this company are as follows: Schuyler V. Shelp, president; Charles K. Rowland, vice-president; Hugh Satterlee, secretary, and Frank Knox, treasurer. These, with George T. Odell, A. C. Ewing and Elmer B. Jones constitute the directorate. This company has an immense tract of valuable oil land and it is preparing to push the work of development. Its experts have declared to a certainty that a large flow of natural gas would be reached by drilling, and Guffey and Galey, recognized as the greatest oil men in the world, are thoroughly confident that they will strike a big flow of petroleum. With this assurance, the promoters of the new enterprise are preparing to spend their money and to go ahead with their plans. The intention of this company is to lay a pipe from their wells to Salt Lake City and furnish the inhabitants with gas for light and heating purposes.

There are other companies which will be launched in a few days. One called the Beehive Co., by Drs. Keogh and Wright with C. K. Rowland and associates. Another company is about to be formed, its originators being John C. Cutler, Jr., Governor Wells, G. D. Pyper and a number of others. At the head of another company we find Judge W. H. King, who will have accomplished his work of organization in a few days. With the numbers preparing to enter the field within a short time we may expect an oil boom in Salt Lake Valley. One of these companies has already increased its capitalization from \$800,000 to \$5,000,000.

There is another company called the Kyune Oil Co., which has filed its articles of incorporation with the Secretary of State. This company is incorporated for \$50,000 and holds 2,560 acres of oil land in Utah County, at the base of what is known as the reservation ridge, from three to five miles from Kyune switch on the main line of the R. G. W. The following are the officers of the company: G. L. Nye, president; W. H. Hendrickson, vice-

president; J. H. R. Franklin, treasurer; W. H. Tawney, secretary. We have a great number of smaller oil companies in the State that are waiting to see the larger ones tap the oil and make it flow.

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### ACCIDENTS FOR 1903.

John Thompson, Jr., an American, a miner, was killed in the Morrison Mine, near Sterling, Utah, on the evening of April 6th, at 7:30. Thompson was killed instantly by the explosion of giant powder.

#### Copy of Inquest:

Thompson was alone. The other two men at work at that time were at face of tunnel, over 700 feet from him. It is, therefore, impossible to give the cause of the accident. Thompson went back for the powder needed at face and we do not know what he did to cause the explosion of the 50 pounds of giant powder that was there. The report of the coroner's jury was that he "came to his death through injuries received at his own hands."

Gio Henrico, age 26, native of Italy, a miner, was killed in the Catle Gate Mine, at Castle Gate, Utah, on June 17th. Henrico at the time of the accident was engaged in taking out a pillar. A piece of rock from the roof fell, striking him and causing injuries from which he died about one hour later.

#### Copy of Inquest:

An inquest having been held at Castle Gate School House, in Castle Gate Precinct, Carbon County, on the 18th day of June, 1903, before Justice of the Peace Thomas Reese, in Castle Gate Precinct in said County, upon the body of Gio Henrico there lying dead, by the jurors, whose names are hereto subscribed, the said jurors upon their oaths do say that said Gio Henrico came to his death at Castle Gate mine, June 17th, 1903, by a piece of rock falling upon him from the roof, causing a fracture of his

back and both hip bones, also causing an internal hemorrhage. Said fall of roof might have been prevented with the setting of props, which were lying in the room at the time, and we exonerate the P. V. Coal Co. from blame or negligence.

In Testimony Whereof, the said jurors have hereunto set their hands the day and year aforesaid.

F. G. BURTON,  
LEWIS A. LARSON,  
PETER BOZONE,  
Jurors.

Attest: THOMAS L. REESE,  
Justice of the Peace.

Samuel Varitti, an Italian laborer, was injured near No. 2 mine at Sunnyside, on the coal track, while unloading coal for the boiler house, on the 21st day of August, 1903, at 8:47 a. m., from which injuries he died.

Copy of inquest:

Sunnyside Precinct, Carbon County.

An inquest having been duly held at Sunnyside, in Carbon County, on the 21st day of August, 1903, before Wm. Hill, Justice of the Peace in Sunnyside Precinct, in said county, upon the body of Saml. Varitti here lying dead, by the jurors whose names are hereto subscribed, the said jurors upon their oaths do say, that the deceased came to his death by an accident and that no person was to blame for the same.

In Testimony Whereof, the said jurors have hereunto set their hands the day and year aforesaid.

A. E. GIBSON.  
G. H. RICHARDS.  
F. DONA.

Ivona Albino, a native of Italy, a miner, age 27, was killed in the Castle Gate Mine. Albino at the time of the

accident was working, taking out a pillar, when a rock fell from the roof upon him, killing him instantly, the rock weighing over two tons.

Copy of inquest:

An inquest having been held at Castle Gate Precinct, Carbon County, on the 9th day of September, 1903, before Thomas L. Reese, Justice of the Peace of Castle Gate Precinct in said county, upon the body of Ivona Albino, there lying dead, by the jurors whose names are hereto subscribed, the said jurors upon their oaths do say: That said Ivona Albino came to his death by a fall of rock in his working place, in the Castle Gate Mine, on September 9, 1903, and that no blame or negligence can be attached to the Pleasant Valley Coal Company or any one else, but that it was an unavoidable accident.

In Testimony Whereof, the said jurors have hereunto set their hands the day and year aforesaid.

(Signed.) REES JOB.

FRANK LATUDA.

FRANK G. STAFFORD.

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Frank Ruffena, a native of Austria, age 43, a miner, was killed in No. 2 mine at Sunnyside, on the 7th day of October, 1903, at about 9 o'clock a. m. At the time of the accident Ruffena was working alone in Room 10 of 2nd Butt Entry. The coal fell from the roof, killing him instantly.

Copy of inquest:

An inquest having been held at Sunnyside in Carbon County on the 8th day of October, 1903, before Wm. Hill, Justice of the Peace, in Sunnyside Precinct, in said County, upon the body of Frank Roffena, there lying dead, by the jurors whose names are hereto subscribed, the said jurors, upon their oaths do say that on the 7th day of October, 1903, Frank Roffena came to his death by a fall of coal in room 10 off 4 raise entry, No. 2 mine, at Sunnyside, Utah, the fall of coal being due to a dry or false slip which could



not be seen by any one. The jury, therefore, finds that no one is to blame for the accident.

In Testimony Whereof, the said jurors have hereunto set their hands the day and year aforesaid.

(Signed.) A. E. GIBSON.  
V. BONIVSCEN.  
ALEX. HARRISON.

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B. F. Fulton, age 47, a miner, was killed in the Sunnyside No. 2, on the 23rd day of October, 1903. At the time of the accident, Fulton and his partner were engaged in widening out the main air course. They were working at the mouth of the same, when a slide of rock and gravel came down, striking Fulton and fracturing his skull and spine.

#### Copy of inquest:

An inquest having been held at Sunnyside Precinct, Carbon County, Utah, on the 24th day of October, 1903, before Wm. Hill, Justice of the Peace, in Sunnyside Precinct, in said county, upon the body of B. F. Fulton, there lying dead, by the jurors, they do say, upon their oaths, that B. F. Fulton came to his death by accident unforeseen, by a slide of rock and dirt in the mouth of a drift.

In Testimony Whereof, the said jurors have hereunto set their hands the day and year aforesaid.

(Signed.) JOHN CRAWFORD.  
SAM'L WOODHEAD.  
W. W. FOWLER.

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Wm. Brace, age 22, an American mine laborer, was killed in No. 2 mine at Sunnyside on November 23rd, 1903. At the time of the accident, Brace was employed with two other men widening out the air course. Brace came to his death by a fall of dirt which he was under-mining at the time.

## Copy of inquest:

An inquest having been held at Sunnyside, Utah, in Sunnyside Precinct, Carbon County, State of Utah, on the 23rd day of November, 1903, before me, Wm. Hill, Justice of the Peace in Sunnyside Precinct, in said county, upon the body of Wm. Brace, there lying dead, by the jurors whose names are hereto subscribed, the said jurors, upon their oaths do say, that Wm. Brace came to his death by a fall of dirt while under-mining the same, in an air course in Water Canyon, and that no blame is attached to any one connected with the work.

In Testimony Whereof, the said jurors have hereunto set their hands this day and year aforesaid.

(Signed.) SAM'L NAYLOR, Foreman.  
JOHN CRAWFORD,  
JOHN HOLLEY,  
Jurors.

## NON-FATAL ACCIDENTS FOR 1903.

Joe Dalpan, aged 22, an Italian, a driver, was injured in No. 1 mine at Clear Creek, on the 10th day of February, 1903, at 10:30 o'clock p. m. At the time of accident, Dalpan was riding on a trip of cars. The coal in the car roofed and he was afraid that his hand would get caught and released his hold, over-balancing and falling in front of the car. His breast was squeezed and bruised.

James Naylor, age 23, native of England, a driver, was injured in the Clear Creek mine on the 18th day of February, 1903. Failure to put Sprages in car and being caught between bumpers of car and face of room, causing calf of right leg to be badly bruised and swollen.

Elijah Allen, age 17, a native of America, a yardman, was injured at the Wasatch Mine, on April 1st, 1903. At the time of the accident Allen was riding on the side of the slack car. Car jumped the track, bruising his right foot and cutting or tearing the flesh upon the wheel of the car. The accident is slight and the man will be ready for work in three or four days.

Joe Goodall, age 46, native of England, a miner, was injured at the Morrison mine, April 18th, 1903. Goodall was working at mining coal at the face of his room, the same being No. 11. He had mined the lower coal, leaving the top bone coal and top coal seam. He was at work removing bone coal when the top coal fell on him. It was made loose by a slip. The foreman had cautioned him just the day before, but Goodall took chances.

John Reese, age 19, native of America, a driver, was injured in the Wasatch mine on Nov. 20, 1903. He was driving a horse along the level, with three cars hitched on, when breeching strap became unbuckled from the back strap, allowing the breeching to fall about the horse's hind legs, causing the horse to kick. Reese jumped from the car and was squeezed between the car and the rib. The wound is not serious, being little more than a flesh wound.

John Holokinsky, age 38, a miner, was injured in the Grass Creek Mine on November 26, 1903. At the time of the accident, Holokinsky went back to light a shot which he supposed was not alight, but while looking for the fuse the shot went off, causing his left arm to be broken in two places below the elbow. Left hand and side were somewhat bruised.

Isiah Thomas, age 35, an American, a driver, was injured in the Morrison Mine on the 18th day of December, 1903. While Thomas was coming out with a loaded trip, there was an empty car standing on the track, causing a wreck, both horses falling down, one falling on Thomas, breaking his left leg a little below the knee.

James Neilson, a miner, was injured in the Winter Quarters Mine No. 1 on December 23, 1903. Neilson at the time of the accident, was engaged in taking a strip out of the pillar. He was putting up a prop and the same fell on him, causing a fracture of his right leg.

## THE U. M. W. OF A. STRIKE.

Carbon County Sheriff calls upon Governor Wells for  
State Militia:

Castle Gate, Utah, Nov. 21.

Hon. Heber M. Wells, Governor of the State of Utah, Salt  
Lake City, Utah:

I am just in receipt of your letter of November 17th, addressed to me at Price, which was forwarded to me at Sunnyside and from there here. I am investigating the complaint you refer to about interference having occurred near Sunnyside and will make full report of the facts. I was called from Sunnyside here on account of disturbances and have arrested and have fines assessed against several parties here who were discharging firearms for the purpose of intimidating men who wished to work, and since coming here I have received report of men being assaulted at Sunnyside. I am just in receipt of a telegram from Scofield that last night workmen were held up and robbed and assaulted and threatened death if they persisted in working against the strike agitators.

This county has a large area and embraces the principal coal mines of the State, employing upwards of 2,000 men, of which two-thirds are foreigners, principally Italians, not speaking the English language, and of which number not to exceed 15 per cent are naturalized.

I have made every effort to preserve the peace in this county, and in answer to the last paragraph of your letter, reply that the local police authority and deputy sheriffs are not sufficient and are powerless to cope with the lawlessness and protect life and property and maintain law and order. My resources are exhausted, and therefore believe it my duty to call upon you as Governor of the State for aid and assistance at Scofield, Castle Gate and Sunnyside.

HYRUM WILCOX,  
Sheriff of Carbon County, Utah.



I spoke to him in regard to the strikers carrying arms, as they were all peaceably inclined and good citizens. He told me that he had conferred with Union Headquarters at Denver in regard to the Governor's letters, and would defer answering the same until he had instructions from that source. I afterwards went to the mine and had a talk with the men who were working, in regard to the strike. They said that there were eighty-five men working, and that they had no grievances and were satisfied with the company's way of doing business. The output on the 9th was 550 tons, which was ample to keep the coke ovens going. From there I went to the company's office and made inquiries as to the condition of things. I found that on the morning before the strike there were 850 men on the payroll and on the morning of the strike there were only thirty-three who went to work. They have been increasing daily, and all the outside men are working to the number of about 175 and today there are between 80 and 90 men at work in the Sunnyside mines. I find that the majority of the strikers are Italians. All the old residents are in favor of working. The men at work say that there has been no threats made against them working, and quiet prevails in the camp. There are only twenty-four men working in Castle Gate today, but Winter Quarters and Clear Creek mines are working with full force of men. The output of the Utah Fuel Company and Pleasant Valley Coal Company at present is 4,000 tons per day. The companies have increased the wages of all their employees 25 cents per day and the miners before the advance were mining 2,240 lbs. to the ton. Now they are mining 2,000 pounds to the ton. Hoping the above report will be satisfactory.

Respectfully yours,

GOMER THOMAS,  
State Coal Mine Inspector.

GENERAL CANNON'S REPORT MADE TO GOVERNOR WELLS.

Headquarters First Brigade,  
National Guard of Utah,

Scofield, Carbon County, Utah, Nov. 26, 1903.

Hon. Heber M. Wells, Governor and Commander-in-Chief:

Sir:—I have the honor to hand you herewith report of my visit to Carbon County, as per your verbal orders received Saturday night, November 21, 1903, to investigate conditions alleged to be endangering public peace as well as life and property in some of the coal mining regions of that county.

In company with Captain W. C. Webb, Battery 9, N. G. U., and Mr. Gomer Thomas, State Coal Mine Inspector, I took Denver & Rio Grande train at 8:30 a. m. Sunday, November 22nd, and proceeding to Castle Gate, being joined at Colton by Sheriff Hyrum Wilcox, whose telegram to you of previous date had suggested the propriety of your making the investigation upon which I was sent. During three or four hours spent at Castle Gate I had an opportunity to talk with not only a majority of the English-speaking people of that place, but also a goodly number of the foreigners, who were able to understand and speak the English language. In no single case did I find a desire other than to resume work in the mine if assured protection from violence on the part of those who were unwilling to do so. It is true, the English-speaking portion did not allege any fear of violence or charge that they had been in any special instance threatened or menaced, but some of them declared that under the conditions at that time existing the feeling of uneasiness and alarm was so universal that they would not dare to leave their families unprotected while they themselves were at work. The foreigners with whom I conversed who were mostly Italians, said that while they wished to go to work, they were afraid to do so and when asked as to whether they could furnish the names of those who had threatened them, they manifested entire unwillingness to give the information.

I was informed of one or two instances where shots had been fired in the direction of the coke ovens, and that men had actually been threatened with violence to themselves and the burning of their property if they attempted to work, but the information in general came in the uncertain way I have referred to.

I attended for a short time a large and somewhat noisy open-air meeting of foreigners, which was addressed by speakers whose language of course I could not understand, but it seemed to have the effect of creating a great deal of rather wild enthusiasm among the audience. At this meeting I had a conversation with a Mr. Price, who is one of the organizers of the particular union to which the strikers are said to belong. He said he was not aware of any instance of violence having been committed or threats having been made against any one who wished to go to work and further declared that he would personally depreciate any such attitude, as he knew from experience that the union could only enjoy the sympathy of the public and the support of its own best members when it kept within the law. He insisted that such parades as had been held there were not intended to be disorderly and that while his followers expected to use every persuasion possible to gain new membership or to prevent the frustration of their purposes, they would go no further than the law allowed.

When questioned as to the grievances which had brought about the condition then existing, he enumerated some which he admitted did not exist in this State, and practically conceded that the only grievance was the unwillingness of the company to recognize the union. He spoke about having been himself stopped and turned back when upon peaceable errand to neighboring coal camp, an invasion of his rights he thought as worthy of investigation as those charged in the intimidation of the non-union workmen already referred to, and he declared that it might be possible for him to obtain the presence of a "Mother Jones" to see whether a gray-haired woman should be treated as he had been. This Mother Jones, I understand is also an organizer or worker in the union.

Mr. Price was asked whether he did not know of a crowd of men two nights before having gone around from house to house, thumping and hammering on doors and



threatening the occupants with violence, if not death, if they did not stop work. He denied that he knew of any such instances.

At this meeting I saw a small American flag clumsily hung on a willow staff with several large black letters painted upon the face and with the union down. I was afterward informed that this flag had been repeatedly carried around the town in processions of the strikers, who indulged in much shouting and in occasional discharge of firearms. Some of those with whom I afterwards spoke expressed the idea that this turning of the flag upside down was more through ignorance than intention; others, however, insisted that it was intended for an expresison of contempt. During the day of my visit there was no parade, although I was assured that they had been of daily occurrence up to that time.

I then proceeded to Sunnyside, reaching there about dark, and had conversations not only with a number of officials and ex-officials of the town, but also with employees of the coal company, who reported threats which had been personally made against them. A very threatening and insulting letter was handed to me by the men to whom it was addressed, and I was informed of letters of similar character which others had received.

Several witnesses testified to the effect that friends had brought them word that unless they ceased work they would wish they had. In one instance, a man testified that he had been shot at in the night, at least the bullet struck a few feet from him. Another stated that in a store he had heard a number of strikers declare that if any attempts were made to evict from the houses they were occupying, they would resort to the match. One of the deputy sheriffs claimed to have heard a great deal of shooting in the direction of the coke ovens, and upon investigation found loopholes in the rear of some of the tent-houses occupied by striking miners, and from which they believed the shooting to have been done.

In a few cases, arrests had been made of violators of the peace, but here, as at Castle Gate, it seemed difficult to obtain definite information as to who the offenders in any of these cases were and so far as the foreigners were concerned they absolutely refused to tell from whom the threats came. Meetings were held, so I was informed, al-

most daily, of those who had quit their employment and were trying to induce others to do likewise but at which meetings none but sympathizers were allowed to be present. It was thought by some of the officers of the county, as well as of the coal company, that the situation might improve by the beginning of the week, but the number of men at work had been steadily decreasing, and before I had finished by investigations there was evidence enough to show that the following morning the reduction would be still greater. Not only were men refraining from work, because, as they said, they were afraid to go, but others from the outside who had been employed, had expressed themselves as not daring to come when they had been informed of the situation.

We were shown two or three where numbers of men ranging from five to twelve in a body were, at their own request, being protected by deputies, from violence which they feared and even with this protection the largest body I visited declared their unwillingness to go to work the next morning, unless they could be assured of absolute protection. Various estimates were made by those with whom I talked as to the number who are actually being deterred from working by fear. The most conservative, I think, was that probably 150 men were idle, who desired to work, and, except for the fear of personal injury, would be at work.

From this point I proceeded to Winter Quarters, where a large number of citizens, at least fifty, I should think, were assembled to give me such information as I might require so far as was in their power. These were in some cases business men, in others employees of the coal company and represented various nationalities. At this time there had been no trouble at either Clear Creek or Winter Quarters, where the mines are, but it was expected as a result of a meeting held by one of the organizers earlier this same evening.

It seems that during the day a committee of the miners themselves had been appointed to canvass the camps and ascertain the feeling of the workmen as to whether they desired to quit work or not and as to whether they had any grievances against the coal company. Each of these committees, by its spokesman, made a report to me of his inquiry. Nearly all of them said that they had seen almost

every workman in their districts. Some said they had seen and talked to every single person. There was entire unanimity in their reports, which was that they had no grievances against the coal company and desired to continue their work, and they did not wish to be forced into joining any union, but if a condition should arise such as existed at Castle Gate and Sunnyside, they would not dare to go into the mines.

An organization known as the Citizens' Alliance seemed to have a great deal of strength in Scofield, Winter Quarters and Clear Creek districts, having upon its rolls the names of nearly 600 men, and I expressed surprise that in a district where the possible strikers would seem to be so far outnumbered by those who did not wish to strike there should be any fear on the part of the latter from the former.

I was answered that it was not only the fear on the part of the mine workers of violence to their families and perhaps to their property while they were at work, but that they also anticipated and it had been promised that 300 or 400 strikers from Castle Gate intended to march over to Winter Quarters, stay there and parade and hold meetings until the mines there should be closed down.

The spokesman for the committee that had visited the Finn miners said that in the district which he had visited hardly a man would dare to go to work if not assured of protection. The English-speaking representatives expressed the same views and declared that while the greatest anxiety was as to their families, who would have to be left alone while they were at work, there was great danger to themselves who, being far under ground, were more or less at the mercy of those on the surface, who could, if possessing force enough, easily wreck the sources of egress, interfere with the fans or other appliances used for supplying air, or in some other way greatly imperil their lives.

There was a deep earnestness about the men who made these declarations for themselves and their co-workers, which very much impressed me, and I was satisfied in my mind that they were very much concerned lest the aid which they felt should be given might be withheld until they would have to lose their employment for the winter through the closing down of the mines. Their interest in the matter was evident from the fact that they came from

their homes (some of them several miles distant) to meet me after 12 o'clock at night, and it was nearly 3 a. m. when our meeting adjourned.

I was furnished ample testimony as to the fact that some of the signers of the Citizens' Alliance agreement had, through fear, allied themselves with the other faction. The case was cited of one who, until the union had been inaugurated in this county, had been prominent in advising his fellow-countrymen not to be led away by organizers or agitators, and who when the agitation began, was confronted by some of the organizers with some of his own statements accompanied by the significant advice that he had better keep still or he would be fixed. The advice was so suggestive that he not only kept still, so far as other talk was concerned, but became vice-president of one of the first unions organized in the county. He told all this to a friend of many years standing, who repeated it to me.

We returned to Salt Lake City on the morning of Monday, November 23rd, and the preparation of the written report was begun that day; but through order issued from the office of the Adjutant-General, requiring my presence and services in Carbon County, I have been unable to complete same until this time.

I may sum my observations as follows: Very few actual outrages have been committed so far as I could learn. There had been much marching accompanied by more or less disorder, with some discharging of firearms under circumstances which suggest that it was intended for intimidation. There was the burning of a railroad car at Sunnyside, which was believed to be caused by incendiarism, as two men were seen to run away from the spot as the flames began to leap over the woodwork, but in the darkness they could not be recognized or apprehended. There has been a vast amount of actual threatening and thoroughly successful intimidation and there exists beyond question a feeling of great fear for personal safety in the minds of hundreds of men who wish to work, but dare not do so.

The situation, all in all, I regard as extremely strained. I believe it will grow worse unless promptly relieved, and I submit that confidence would be much strengthened and the feeling of safety and stability restored if the request of the sheriff, which I found backed up very generally by almost all the English-speaking people that I met, namely,

the sending of troops into some portion of the county, could be complied with.

The coal company had at the time of my visit about 150 men employed as deputy sheriffs to protect its property and to give such protection as they could to its employees, but the feeling was general that the power of the State as represented in its uniformed and organized troops would inspire much more respect in the minds of those who were inclined to be disorderly or riotous, as well as a greater measure of confidence in the minds of those who wish to be law-abiding but do not feel entirely safe under the protection which they are now receiving. In this view I have to say that I concur.

I have the honor, sir, to be your most obedient servant.

JOHN Q. CANNON,  
Brigadier-General, N. G. U.

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## STATE BOARD OFFERS TO ARBITRATE STRIKE.

Salt Lake City, Utah, Nov. 19, 1903.

Messrs. Crawford and Lee, Sunnyside, Utah:

Board of Arbitration, after conference with the Governor, tenders its service to settle dispute between the Utah Fuel Company and its employees. Come at once to Salt Lake City to confer with us. Will you arbitrate? Answer at once by wire, care Tribune office.

J. S. DAVELER, Secretary.

In answer to this measure of the Arbitration Board, the Utah Fuel Company, through W. H. Myers, general sales agent of the company, received the following message last night from Vice-President Kramer of the company, who is now at Castle Gate:

“Castle Gate, Nov. 19.

W. H. Myers: I am in receipt of a telegram from you, dictated by the Board of Arbitration, to which they

ask that I wire to J. S. Daveler, Secretary of the Board, care of Salt Lake Tribune, the message of the Board, being as follows:

'After conference with Governor Wells, we understand that you, on behalf of the Utah Fuel Company, would be willing to arbitrate differences which now exist between the Utah Fuel Company and certain of your employees. Is it correct?'

This company is at all times willing to arbitrate any differences that may arise between the company and its employees pertaining to wages, hours and any and all questions incident thereto, but it declines to arbitrate any question that has as its purpose the recognition of the United Mine Workers of America or any other union that arrogates unto itself the right to shut down at its own will or pleasure mines, whether organized or not, and for the further reason that it would give any such union absolute control of the selection, employment and retention in service and discipline of all employees, including mine officials who would not be members of the union. It is understood that the law creating the Board of Arbitration does not provide that the Board take jurisdiction pending a strike or lockout when matters of difference exist between employers and employees. No grievances whatever had been presented to the Utah Fuel Company by any of its employees prior to their quitting work at Sunnyside. Out of the 850 employees, some 200 who had gone out on strike submitted twelve grievances several days after they quit work, all of which were answered to their committee.

"The concessions made by the company, so far as its officers are aware, were satisfactory, as no further communication has been received from their committee. We are unofficially advised that at a subsequent meeting, held by the 200 men, they voted to continue the strike for the reason that the company declined to comply with their demand for the exclusive recognition of the United Mine Workers of America. Upwards of 400 of the employees at Sunnyside refused to join in this demand and are now at work.

"Within the past few days national organizers of the United Mine Workers of America have been at Sun-

nyside, and we are informed they decline to officially organize the 200 men for the reason that the constitution of the organization prevented recognition or authority to form a local lodge composed of men who are upon a strike, and thereupon organized a probationary membership and advised these men to go back to work pending a legal organization under their constitution.

"Proper and sufficient notice was given to all employees that unless they returned to work November 14th, they would be discharged from further service with this company. Thereupon about 200 men did not go to work and were discharged. At Castle Gate, outside national organizers succeeded in getting about one-third of the men who were at work to join the union, and immediately thereafter a strike was called without submitting to the company any grievances whatever, and we are therefore unadvised that there exists for arbitration any grievances on the part of the men who have gone out on strike. The strikers at both Castle Gate and Sunnyside have undertaken to intimidate and by coercion to prevent a majority of our employees from going to work.

GEORGE W. KRAMER.

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### ADOPT RESOLUTIONS.

The citizens of Scofield held a largely-attended meeting Monday night, December 21, when the following resolutions were unanimously adopted. During the meeting, speeches were made in English, Italian and Slavonic. The resolutions read:

Resolved, by the members of the Citizens Alliance in mass meeting assembled:

First—That we will support the Utah Fuel Company and the Pleasant Valley Coal Company in their determination to conduct their own business and operate their own mines.

Second—That a strike at Winter Quarters and Clear Creek would be an injury to all and a benefit to none. That it would injure and paralyze business and would result in untold suffering and misery upon many of our people.

Third—That the miners of these camps are satisfied with their wages and with the treatment received by them at the hands of their employers, and we denounce the attempts of irresponsible, imported agitators and professional disturbers to inflame the passions of the people for the purpose of fomenting strife and discord that can accomplish no good. All who are interested in the welfare of our towns and villages and in our country should with firmness oppose the unreasonable demand made by the emissaries from Colorado, and should uphold law and order.

Resolved further, That we endorse the officers of the coal company in guarding their property and the lives of loyal employees from danger, and that we endorse the officers of said companies and the sheriff of this county in asking the Governor to send militia here to preserve the peace and protect the property and lives of our citizens.

Resolved further, That we want neither professional agitators, anarchists or dynamiters in our midst, and we respectfully but firmly ask that class of people to leave Carbon County and Scofield for Carbon County and Scofield's good.

These resolutions represented the sentiment of nine-tenths of the old-timers of Scofield and Winter Quarters, citizens and employees of the company, some of whom have lived here as long as 25 years; those who have homes here; families here and whose every interest is centered in this district.

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#### CONFERRED WITH THE GOVERNOR.

State Senator Simon Bamberger, S. H. Love, George N. Lawrence, of the Sixth Senatorial District; Senator Harden Bennion of the Twelfth District, who happened to be in the city yesterday; Hoyt Sherman of the Utah Commission of the World's Fair, Thomas Hull, Speaker of the House of Representatives; Brigadier General John Q. Cannon, Adjutant General Charles S. Burton, Secretary of State James T. Hammond, and Joseph Young, general superintendent of the Rio Grande Western Railroad. The latter was present in a double capacity. His road is more or less effected by the strike and should the troops be



called out they would be handled by his road, and he desired as much time as possible in making preparations for their transportation.

The Governor invited the members of the Legislature to be present, that he might confer with them relative to the financial phase of the matter. He also desired to lay the facts of the case before them, and secure from them expressions as to what they thought was best to be done in the premises. They were united in the opinion that the situation is sufficiently grave to warrant calling out the guard.

They commended the Governor upon his willingness to take the situation in hand so quickly and lay plans to cope with it with a firm hand.

Relative to the financial part of the matter, they assured the Governor that he need not have any fear relative to the willingness of the Legislature to meet in special session as soon as the proclamation might be issued, and come to his aid by passing an appropriation sufficiently large to enable him to keep the Guard upon the scene of the coal strike as long as the situation may require an armed force to protect life and property.

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### GOVERNOR WELLS' PROCLAMATION.

A proclamation issued by Governor Wells last night calls out the entire troops of the National Guard of Utah, it follows:

By the Governor of the State of Utah.—A Proclamation:

Whereas, the Sheriff of Carbon County represents that he and the local police authority in said county are unable to maintain law and order at Scofield, Castle Gate, and Sunnyside, in said county, and calls upon the Executive of this State for aid, and,

Whereas, After a full and complete investigation of such representations, it appears that there is imminent danger of breaches of the peace and destruction of life and property in said county,

Now, Therefore, I, Heber M. Wells, Governor, in pursuance of and by authority vested in me, do hereby call out and order the active services of the State for the execution of its laws, the preservation of the peace, the maintenance of order, and the prevention of the menace to life and destruction of property, the organized and equipped militia known as the National Guard of Utah, the particular organization of which as which as the same may be required, with their special place of service within said county, it be as shall hereafter be designated in proper military orders.

In Testimony Whereof, I have hereunto set my hand and caused the great seal of the State to be hereunto fixed, this twenty-third day of November, nineteen hundred and three.

HEBER M. WELLS.

By the Governor.

(Seal.)

J. T. HAMMOND,  
Secretary of State.

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### GENERAL ORDERS ISSUED.

Adjutant-General Burton last night issued a general order directing the assemblage of the National Guard of Utah. His order follows:—

Headquarters National Guard of Utah,

Adjutant General's Office,

Salt Lake City, Nov. 23, 1903.

General Order No. —. The Brigadier-General Commanding the National Guard of Utah is ordered and directed to assemble without delay such organizations of the National Guard as he may deem necessary and station the same in Carbon County to assist in the enforcement of the laws of the State, preserve life and property and prevent breaches of the peace, in accordance with the proclamation of the Governor of this State of even date herewith. He is authorized to make all necessary arrangements, incur all

proper expense, accounting for the same on regular vouchers and issue all detail instructions necessary for execution of this order.

By order of the Commander-in-Chief.

CHAS. S. BURTON, Adjutant-General.

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## WHY GOVERNOR WELLS CALLED OUT THE GUARD.

On November 23, 1903, Governor Wells made the following statement concerning the strike situation and the necessity for calling out the troops:

"The calling out of the militia was a step I was extremely loth to take and only decided to do so after full investigation. There is no question but the facts fully warrant it. Conditions are simply these: A large number of the coal miners are perfectly well satisfied with their wages and their hours, and all their surroundings. They have no grievances against their employers and all they ask is to be let alone. The striking coal miners led by so-called organizers, won't let them alone, but they are threatening and intimidating the satisfied men that if they continue at work they will do them bodily harm. Under these conditions, the satisfied men are afraid to go to work because of possible violence to themselves and families. The sheriff of the county has reported to me that he and all his forces are unable to cope with the situation and are powerless to maintain peace and protect life and property. I have been informed of instances of personal violence and threats to kill and burn persons and property. It is in my opinion a condition demanding an immediate check. While I am an advocate of the legislative rights of organized labor, I object, and will resist any attempt to visit upon the people of this State the sins of another State. We were foremost to legalize the eight-hour day in Utah, and instead of being applauded and assisted and respected for it, these agitators are seeking to punish us for it. It won't do. As long as I am Governor, I shall resist the tyrannical and unlawful interference of individuals or unions with the peaceable pursuits of the citizens of this State. Such mem-

bers of the Legislature as I have been able to confer with are a unit in insisting upon this course as the plain duty of the State.

I expect to keep the military forces in the field until the last vestige of danger to our citizens has passed. If it is necessary to assemble the Legislature to lay the situation before them and ask for further resources, I shall not hesitate in doing it."

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### MINERS' DEMANDS FORMS THE BASIS OF CONFERENCES.

The demands of the striking miners of Carbon County as prepared by William Crawford, Chairman, and David Wilson, Secretary, of the meeting held November 10, 1903, are as follows:

First—That tracklayers shall lay and take out track in all cross-cuts, the company to pay \$2.50 per day for driving the same.

Second—That we have 2,000 pounds for a ton, instead of 2,240 pounds, the system used by this company at the present time.

Third—Have the scales properly tested from time to time by a Government official.

Fourth—That the miners receive 20 per cent advance on 2,000 pounds.

Fifth—Any miner taken from usual place of work to drive or any other work, shall receive \$3.25 per day.

Sixth—That the company replace the 50 cents per yard taken off entries about eight months ago.

Seventh—That the miners have a check weighman at each tippie, his pay to be deducted through the office.

Eighth—That drivers, timbermen, trackmen and all other inside daymen receive 20 per cent per day in advance.

Ninth—That all outside men connected with the mines receive 20 per cent advance and teamsters have fifteen minutes to care for their teams, as formerly.

Tenth—That we abolish the coupon and scrip system.

Eleventh—That we shall receive pay semi-monthly.

Twelfth—That no employee be suspended or discharged for taking part in these proceedings, and that the United Mine Workers of America be recognized.

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## ITALIAN CONSUL HEARS GRIEVANCES OF HIS COUNTRYMEN.

Scofield, Utah, Nov. 29, 1903.

Dr. Guiseppe Cuneo, Italian Consul, devoted the greater part of today listening to the grievances of his countrymen. He will present their troubles to the officials. He makes the following statement:

“My duty called me here to do all I could to preserve law and order, and to look after the interests of my countrymen. By means of committee of five, I finally learned what I believe to be their grievances. They desire control of the weights of the coal which is taken from the mines. They also want an increase in wages. They further desire that the union be recognized by the company. All the committees, with one exception, stated that the company filches from the men on the weight. They admitted that an increase of wages had been granted by the company to some of the men, but said that the men were now compelled to mine more than a ton of coal to get credit for one ton. For that reason, they desire to have control of the weights. The one committee which was an exception in these delegations, objected to the use of the word implying filch or steal. The one committee denied that the company actually filched from the men, but they said that it took advantage of the miners. They also claim that they are not permitted to enjoy the rights of citizens, but I have not had time to investigate that phase of their grievances yet. The only advice I gave them was in the name of His Majesty, to respect and obey the laws of the country. I put before them the danger and damages that would arise from a strike. I told them that they should by no means listen to anyone's advice, not even mine or that of organizers, but to follow only their own conscience and do what they thought was right. My motive is strictly independent and my position is

neutral. I will get a statement of the other side of the trouble from the officials of the company. I will then present both sides to His Excellency, the Governor of Utah, and report the same to His Majesty, the King of Italy. There my duties will end."

Dr. Cuneo reported the result of his investigations to G. W. Kramer, vice-president of the Utah Fuel Company, also to General Cannon. He is to confer with the Governor during the week.

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### COMMERCIAL CLUB COMMENDS ACTION OF GOVERNOR WELLS.

At a special meeting of the Board of Governors of the Commercial Club, held at 4 o'clock Tuesday afternoon, December 1st, the following resolution was, after an extended discussion, unanimously adopted:

Be It Resolved, That after a careful and thorough canvass of the causes and conditions of the coal miners' strike in Carbon County, this State, we are of the opinion that the action of His Excellency, Governor Wells, in calling out the troops for the purpose of preserving order, protecting life and property and enforcing the law in the district affected by said strike, was entirely justified by the circumstances and absolutely necessary for the accomplishment of the purpose indicated.

Resolved further, That we earnestly commend him for the thoroughness and impartiality with which he has investigated the situation and the promptness with which he has exercised his authority as Governor in this emergency.

Resolved further, That we pledge him loyal support should developments, in his judgment, warrant the calling of a special session of the Legislature, and in any other measure he may, as Governor of Utah, decide to be proper in his effort to effect an early adjustment of the differences at present existing between the Utah Fuel Company and its employees.

Taken from Goodwin's Weekly:

"The Governor has done well to hurry the State Guard forward, and while we hope no violence will be attempted, we further hope that should there be cause for sharp work it will be done in a way that will be notice to every scoundrel in the land who poses under the guise of a laborer."

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### TALK WITH SUPERINTENDENT SHARP OF SUNNYSIDE.

Sunnyside, January 2, 1904.

"If the State of Utah can furnish us enough miners to work our mines, the Utah men will be given every preference and we will hire no more foreigners. This company has had enough of the foreign element, which has caused us so much trouble and we will hire no more foreigners unless we are forced to."

Mr. Sharp made this statement to me in the course of a general discussion of the Carbon County strike and its probable results. Continuing, he said:

"The company was, in the first place, forced to hire foreigners, because no other class of miners could be secured. We would get plenty of applications from the farmers in the valleys during the fall and winter, but in the spring these men would go away again and we 'would be up against it' for help. The foreigners came and wanted work. They came, as a rule, good miners, and we had to have miners, so we filled up our mines with them to our sorrow, as the outcome has proved, and we are through with them, if we can get along without them.

"We have had a hard fight to get men here during the past two months, but we are beginning to see daylight ahead now. In times past, the farmers have come here looking for work in the fall. Sometimes we could give it to them, but sometimes we could not. This condition worked against us when we sent out among the farmers in the valleys after the strike was declared. Some of them who had been disappointed when they applied for work before,

would say something like this to our agents: "How do I know that I am going to be able to hold a job there? How do I know you will not get some foreigner to take my place as soon as you can find one?" We needed these farmer boys. Needed them badly. So we had to guarantee them employment for as long a period as we had employment for them and as long as they could do the work. Accordingly we told them what I have just told you, that Utah men would be given every preference in these mines from now on, and that if we could prevent it, the foreign element would never again be permitted in the mines of the Utah Fuel Company. But can Utah furnish us enough men? We will do our part, if the working men of Utah will turn out in numbers sufficient to operate our mines. Some of the men we have here now will no doubt stay with us. Others will likely return to their farms in the spring. We must operate the year round, and if we cannot get enough English-speaking men to keep the plant running, we may have to fill up with foreigners again. We will do it only as a last resort. We have suffered enough through these foreigners."

"I do not believe there is any danger of organizing the men now in our mines, against us," Mr. Sharp continued in answer to a question. "The Mormon Church took a hand in this trouble and these young fellows now in our mines are mostly Mormons. All their teaching through all their lives have been against secret organizations and even should organizers manage to reach them, I do not believe they could be organized. It is against all the principles that have been impressed upon these young men from their infancy and they are not going to forget all their teaching readily. These men came here knowing that a strike was in progress. Many of them felt that their acceptance of a position in these mines might entail upon them a risk of personal injury. They have been bitterly assailed by the strikers publicly and privately, and they have no love for the men who have thus attacked them. I do not believe there is any likelihood of the strikers making enough converts among the men now at work for us to cause us trouble. The Utah Fuel Company has a campaign of education ahead. We must educate our miners. It would be silly to tell you that all the men now working are capable miners, because they are not, and know they



are not. But in the main they are men who will make good miners, if they stick to us and if others will act with them. It will cost the company something to educate these boys in coal mining, but we figure that the benefits resulting from eliminating the foreign element will more than compensate for the cost. It is costing us a good bit to operate these mines right now. We will have a great number of company guards to pay. We have to pay overseers to supervise the work of the inexperienced miners, and we are suffering financially in many ways through the lack of experienced miners, but we are determined to make our policy win if we can. We are getting strong support from the people in the valleys about here, especially the prominent Mormons. These people realize that a market for their produce and for their labor was in peril and they rallied to our support. I know, personally, that many farmers now at work in our mines came here not only because they needed work, but because they realized that if the company lost this strike their farms would become practically worthless. We have been blamed for filling our mines with foreigners. I have explained to you how this came about. We are as sick of the foreigners as the public possibly can be and we are only too willing to become party to an agreement to keep them out forever."

Mr. Sharp's views, as expressed above, are based on the belief that the Carbon County strikers are hopelessly beaten, a belief unanimously expressed as well by other high officials of the company. So far as surface indications in the camps show, the belief is correct. Yet the strike leaders and the strikers in general still maintain that the strike has only begun. They are submitting peaceably to eviction, except in a few cases, where they believe they have good legal grounds for resistance in the courts. Many of them are moving off the company's grounds to tents pitched adjacent to the mines and are subsisting partially on supplies furnished by the unions. A few, very few, have returned to work in the mines and repudiated the union. Large numbers are availing themselves of the one per cent mile rate offered by the Rio Grande Western and are leaving for other States.

The strike leaders announce no line of campaign, and the future of the people now living in tents is, therefore, a matter of pure speculation. The tents are new, are floored

with wood, straw, etc., and equipped with stoves. They are fairly comfortable, but it is useless to contend that any tent, however well furnished, is so desirable for residence purposes as the poorest house during the winter days and nights in the Utah mountains. It naturally follows that the strikers, their wives and children will suffer as a result of the movement to the tents. The next question is, What will they gain? Their leaders, so far, have not given a definite answer to the question. Speculation is easy and purposeless.

The number of the strikers in Carbon County has diminished perceptibly during the past two weeks. It is idle to argue to the contrary with one who has been on the ground during that period. The fact is everywhere apparent. Exact figures are not obtainable, but the loss of 300 from the strength during the early days of the strike might not be excessive. The low rate of the Rio Grande Road is moving people away fast, as proved by the records of the ticket agents. Over forty strikers have availed themselves of the rate and left Sunnyside alone, during the week just closed. Most of them likely will not come back. The same is true in greater or less proportion of the other camps in the county.

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### FINALLY REACH AGREEMENT.

Magnanimous concessions are made by the Utah Fuel Company.

Ready acquiescence on part of striking miners, who save for themselves the sum of \$75,000.

By magnanimous concessions on the part of the Utah Fuel Company and ready acquiescence on the part of the striking miners, a settlement has been reached by which the most bitter and vicious labor struggle in the history of the State is practically terminated. The fight for union recognition, however, will be continued indefinitely. The settlement was reached today between G. W. Kramer, vice-president of the company, and Attorney W. H. King, on behalf of the strikers. It does not effect the claims of either contending faction in the way of an adjustment of grievances but permanently settles all financial controversies. At the

same time it destroys any apparent reason or excuse for the strikers to continue to reside in this county. Representatives of both sides believes that a general exodus of foreigners will begin in a short time.

The agreement reached today saves the strikers a sum approximately of \$75,000 which would likely have been confiscated by the company for the arbitration proceedings. It was this threatened confiscation of miners' homes which caused menace to the peace of the State and furnished whatever pretext was necessary for the sending of the State troops into the coal fields. By means of the agreement, all probability of an actual conflict has been averted and with the exception of three small detachments the military forces have been removed from the field.

The strikers own 225 houses which have been erected on company property. According to the terms of their agreement with the company, they could be evicted at any time. Suits to drive them from their homes have been begun in all the camps. They were delayed, however, pending the negotiations for a settlement, and have now been dismissed.

The terms of the agreement just reached provide for the appointment of three appraisers. S. C. Sherrill, a contractor employed by the company, was selected while the strikers appointed H. H. McIntyre, a contractor and member of a trades union of Salt Lake. These two agreed upon a third, who is Hon. L. M. Olsen, a merchant of Price and a former member of the Legislature. The appraisers are now visiting the various camps for the purpose of fixing the values of the houses in dispute.

They will appraise all the houses and improvements owned by each striking tenant and also fix a reasonable rental value of the property. When this is completed, the company will lease the improvements for six months and pay the rental value fixed by the appraisers in advance for the specified period of six months.

The owners, or strikers, will have the right to sell the property at any time before October 31, 1904, subject to the approval of the company, or to remove the improvements from the company property at any time before. In the event the property is not sold or removed before October 31, 1904, it becomes the property of the company. The

strikers are granted permission to visit the property at stated intervals.

The agreement further provided for the appointment of an agent or an attorney to represent the strikers in matters pertaining to the leasing, sale or removal of property or carrying out the terms of the agreement. Attorneys King and Fowler were named as trustees.

This agreement goes into effect at once and has been ratified by all of the strikers, with the exception of a score of miners at Castle Gate, who are from a southern province of Italy. They are violently opposing any settlement where they must give up their homes, and threaten a disturbance. Their opposition is not considered serious, however.

The agreement is highly satisfactory to both the company and the strikers. The strikers regard it as a victory, for the reason, they explain, that in case they win in their struggle for union recognition and are again given employment by the company, they will have homes to which to return. If they lose in the labor fight, they still have the property. Company officials, on the other hand, declare that the strikers must now leave the county. They are not employed and have no further claim to consider. Their removal will only be a matter of a few weeks, it is asserted. Aside from the claims of the two opponents, it is evident that endless litigation involving an enormous expenditure, has been avoided. The eviction suits would have been bitterly contested by both parties.

Meanwhile, the strikers are living in tents provided by the national organization. They assert that they will live in the county until the union is recognized, and will succeed in organizing any forces which the company imports. There are still between 500 and 600 strikers in the county. An exact copy of the agreement follows:

This agreement, made and entered into this ..... day of January, A. D. 1904, by and between George W. Kramer, of Denver, Colo., party of the first part, and ..... of Sunnyside, Carbon County, Utah, party of the second part, Witnesseth, that, WHEREAS, the party of the second part, the owner of a certain dwelling, being ..... situated upon certain land owned by the Utah Fuel Company, a corporation at

Sunnyside, in Carbon County, Utah, and has heretofore, as the lessee of said company, held and occupied said premises, the said dwellings, and, WHEREAS, the said Utah Fuel Company on or about November 30, 1903, caused the party of the second part, to be personally served with a written notice of the rescinding of said lease, requiring said lessee to, on or before December 21, 1904, remove from its said premises said improvements, and to quit and vacate the same, which said notice remains uncomplished with, and, WHEREAS, the said Utah Fuel Company has brought or is about to bring, an action against the party of the second part for such unlawful detention of the premises, and, WHEREAS, in order to obviate such litigation, the said party of the first part has proposed,

FIRST—That he will pay to the party of the second part the sum of ..... dollars for the rental for the said dwelling and adjacent buildings appurtenant thereto, for a period of six months, beginning on January 6th, 1904, and ending July 15th, 1904, with authority to sublet such leased premises during the said term to whomsoever he chooses, the party of the second part to waive all claims and damages for waste and injury of such leased property, except as against such sub-lessees in actual possession and occupancy thereof.

SECOND—That said improvements are to be removed from the lands of the said Utah Fuel Company before November 1, 1904, unless sooner sold subject to the written approval of the general manager of the said Utah Fuel Company, in pursuance of the regulations of said company hereby assented to, limiting the use of its lands and premises to its actual employees or other persons so approved by said general manager.

THIRD—That after July 15, 1904, and until October 31, 1904, the party of the second part, subject to such regulation of said Utah Fuel Company and such consent of the general manager of said company, shall be at liberty to lease said improvements to employees of said company or other persons so approved by said general manager.

FOURTH—That in the event of the failure of the party of the second part to dispose of or remove from the said premises of said company, said improvements as hereinbefore set forth, the party of the second part shall for-

feit to the party of the first part all of said improvements and the party of the first part shall be entitled to the possession thereof on November 1, 1904.

FIFTH—That the party of the second part, subject to the provisions of this agreement, as hereinbefore set forth, as to the rental period and as to the approval of the general manager, may, at any time before November 1, 1904, sell or remove said improvements from the lands of said company upon the paying and tending to the party of the first part such portion of the advance rents paid as aforesaid as will ratably cover the unconsumed portion of said rent period at any time when the party of the first part or his sub-lessee shall, by virtue of such sale or removal, part with the possession thereof.

SIXTH—The party of the second part to refrain from going upon the premises where such improvements are situate during the term for which said improvements are rented by him, except for the purpose of removing his improvements therefrom or of inspecting said premises not more than once every thirty days, and,

WHEREAS, the party of the second part has accepted said proposal,

NOW THEREFORE, In consideration of the sum of ..... dollars, the receipt whereof is hereby acknowledged, the said party of the second part does hereby agree to, on or before January 15, 1904, deliver to the party of the first part the possession of the said premises, and that ..... will, in all respects, comply with the provisions of said proposal.

It is further mutually agreed and understood that the said Utah Fuel Company uses its said premises as part of its plant and for the convenience only of its actual employees, and that the certain lease heretofore held by the party of the second part to said premises from said company, was, on December 31, 1903, extinguished and rescinded and that this agreement is based upon the agreement of said party of the first part as vice-president of the said Utah Fuel Company to waive a present forfeiture of said improvements by reason of the default and failure of the said party of the second part theretofore to comply with the regulations of said company as expressed in its lease of said premises.

In Witness Whereof, the said parties have hereunto set their hands and seals on the date in this agreement first written.

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### PAYROLLS INSPECTED.

Every miner and other employee is assessed \$1 each month for medical attention for himself and for his family, regardless of whether he works one day or a full month. Miners are also assessed 1 cent for blacksmith charges on each car of coal they mine.

The payrolls do not show the number of days or hours the miners work, as they are paid by the ton. The Castle Gate miners do not average over eighteen days work each month, when it is at their option to work from twenty-five to twenty-seven days each month. For this reason, their net earnings may not be \$2.50 per day for thirty days. All the mines close on Sundays. The men have the opportunity of working twenty-six days each month, but seldom do this. This cuts down their net daily earnings average.

Fully 10 per cent of all miners lay off every day, and the company, to have 200 men working, must carry 220 men on its payroll. In September, the average number of miners who worked was 243, while 298 men appeared on the rolls.

On October payroll, one sheet was taken as an average. On this sheet there were twenty-three names. The high man got \$93.79 and the low man \$10.79. These men worked at the same tonnage rate. Three men got over \$80.00; two between \$70.00 and \$80.00; five between \$60 and \$70, and seven between \$50 and \$60. These men worked anywhere from three to twenty-two days.

The company pays a flat rate of 80 cents and 95 cents per ton. This rate is now 85 cents and \$1.05 per ton.

At Castle Gate, under the old rates, in October 296 men drew checks that amounts to \$20,501.67, an average of \$69.26. This includes every man on the payroll. Many of them worked only half of the month. In this camp one expert miner, who worked every day, drew \$135.44 and another \$130.47.

The miners furnish their own powder. Increases in the pay of the day men, who do not work on tonnage rates, have been made as follows: Outside laborers, 20 cents, per hour, often getting \$2 for nine hours work; inside laborers as follows: Second brattice men, from \$2.50 for eight hours work to \$2.75; trackmen, \$2.75 per day to \$3.00; rail and tie men, \$2.50 to \$2.75; rock miners, \$2.75 to \$3.00; wire men, \$3.00 to \$3.30; watermen, \$3.00 to \$3.30; water men's helpers, \$2.75 and \$2.50; boys, \$1.00 to \$1.10; roller men, \$2.75 to \$3.00; motormen, never less than \$2.50. These men are on a sliding scale. For every trip over forty-five, the men get extra. John Daniels earned in the month of October, \$103.30; Grover Lewis, \$91.08; Levi Davis, \$95, and a boy named Davis, not yet twenty years old, \$91.14. William Banner, a mule driver, drew \$83.90 in October.

Outside men all have worked eight hours per day since November 1st. Prior to that time, they never had a full ten-hour shift.

Company day men average, on the inside, \$3 per day. They were increased as follows: Blacksmiths, from \$3.15 to \$3.45; pick sharpeners, \$2.75 to \$3.00; carpenters, \$3.00 to \$3.30; prop sawyers, \$2.00 to \$2.20; weighmen, \$60 to \$75 per month; firemen, \$60 to \$75 per month; stable men, \$60 to \$75 per month.

At Winter Quarters, the outside men get the same schedules. All inside men, except miners, get the same day rates as those previously quoted. The miners' total pay roll for October for this camp was \$17,171.83 for 239 miners, or an average of \$71.85 per man.

At Clear Creek in October, 276 miners worked drawing \$18,198.33 or an average of \$65.94. During this month (October), a new trackscales was put in at the camp, causing a shortage of coal cars, curtailing the output and decreasing the general average.

At Sunnyside in October, 229 miners received \$15,495.15, or an average of \$67.66. Many of these men worked but eighteen, twenty or twenty-one days. All the Utah mines, including Castle Gate, Winter Quarters and Sunnyside, worked twenty-seven days in October. The Clear Creek mine worked but twenty-six. But few of the men worked the full month, many averaging twenty days.



Salt Lake City, Utah, January 12, 1904.

*To the Hon. Heber M. Wells, Governor of the State of Utah, Salt Lake City:*

Dear Sir:—I submit to you my report on the condition of the mines in Carbon County, the report covering an inspection made between December 26th, 1903, and January 10th, 1904.

The first mine I visited was No. 1 at Sunnyside. I found 172 miners working and 31 day men, total 203. The output of coal was 617 tons. I went through the mine and found all places well ventilated, timbered, watered and kept damp. As I entered the new men's places, I found very few of them were dissatisfied with the work. They all felt as though they would soon become miners. The company has employed one practical miner at \$3.50 per day, whose duty it is to take care of every 25 new men and show them how to dig coal and also how to put their props. This man is instructed by the management to see that all places are kept in safe condition for the new men to work in. There are also two fire-bosses, who go around the mine twice a day, once in the morning before the miners enter, to see that all gasses and other dangerous material are kept clear before the miners enter. They make another round in the afternoon to see that the miners place their shots right, and to see that the mining is done according to rules, as all mining must be made six inches beyond the end of the hole. No shots shall be made unless all places within 30 yards are in a wet condition, so that dust cannot be raised by a windy shot. It is also the duty of the fire-bosses to see that all places are well timbered and made safe, also to see that all places are well watered and kept damp. There is also a mine foreman whose duty it is to see that the mine is kept in a safe condition and to give instructions to the fire-bosses and also to the men, and to see that all instructions are carried out.

After I went through the mine, I made an examination of the scales that weighed the miners' coal and found them to be correct.

I next made an inspection of No. 2 mine. I found 137 miners in the mine and 31 day men, a total of 177. Men outside of operating mines, 86. Men employed at the coke

ovens, 95; total number in and around both mines, 561, which makes a number of 289 men less than before the strike. There were about one-half of the above 289 doing grading work, taking out rock and building coke ovens, which are not needed at present, so it really makes 145 men less than before the strike.

As I went through No. 2 mine, I found it to be in a good condition, with plenty of good air, all places timbered, watered and kept damp. The conditions in regard to taking care of the new men were the same as in No. 1 mine. The same number of practical miners, fire-bosses, one foreman and an assistant. In my opinion, the new men at Sunnyside are making a very good showing, both mines producing 1,120 tons of coal per day, which is about 180 tons less than the output before the strike.

I next visited the Castle Gate Mine. In this mine there were 146 miners and 92 day men, a total of 233. The daily output at this mine is 580 tons. As I went through the mine, I found it to be well timbered, ventilated, watered and kept damp. Here the conditions in regard to the new men are not quite so good as the other mines, as the coal is hard to mine and it takes nerve and muscle to produce the coal. The farmer, rockmen, and railroad men are not accustomed to use their nerve and muscle in this way, so it is taking a little longer to train them, as it takes a good pickman to make a success at the Castle Gate Mine. Taking all these things into consideration, the new men are doing very well, as 146 of them mine 580 tons per day. The company uses the same precautions in regard to taking care of the new men, having the same number of practical miners. The next mine I visited was at Clear Creek. I found 220 miners and 96 day men, a total of 316, the daily output at this mine being 1,350 tons. As I went through the mine, I found it in a very good condition, with plenty of timber and ventilation, and all places kept damp. The condition in this mine is different to the Castle Gate and Sunnyside Mines, as it reminds me of quarrying rock more than digging coal, and with the aid of the practical miner the new men are doing very well. The company employs one practical miner to every 25 new men and pays them \$2.50 per day, to show the new men how to mine this coal. The same number of fire-bosses and mine foremen as in

the other mines. The Clear Creek Mine is making a very good showing, 220 miners producing 1,350 tons per day.

My next visit of inspection was at Winter Quarters. Here I found 130 miners and 91 day men, a total of 228 in and around the mine. The total output is 1,176 tons per day. As I went through the mine I found it to be in a fairly good condition, taking everything into consideration. I visited all the new men in the mine but four, and found them all satisfied with the exception of two or three. The condition in this mine is different from all the others. It has a big seam of coal and lots of poor roof, which makes it a very hard proposition for the management to handle the new men not accustomed to mining coal, but I must say that they use more precautions here than at the other mines. Here they put one practical miner to look after every four new men. They do this throughout the mine. By doing this, they produce quite a tonnage with a very small percentage of accidents. After going through the mine, I examined the mine scales and found they to be correct.

After going through all the mines and seeing the old and new miners, the only complaint was that they were not satisfied with the long ton, which is 2,240 pounds. They all seem to want the short ton. In my opinion, I think it would be wise on the part of the management to change this to 2,000 pounds to the ton and pay the miners for the run of mine in place of taking one-third off or so, as we know that the miner is a jealous fellow. When the company takes off the one-third, he imagines that there is more taken away than there should be, so I think if the company would do away with the long ton and pay the miner for the run of mine, it would be a great benefit to the company, also a great satisfaction to the miners. I found quite a number of strikers in Castle Gate, Sunnyside and Scofield. They all seemed to be in a quiet mood and making no disturbance. These mines are producing 4,226 tons of coal per day.

The management is to be complimented for its progressive spirit and the precautionary methods adopted for the safety and comfort of its employees.

Yours very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

# REPORT FOR 1904.



# REPORT

OF

## STATE COAL MINE INSPECTOR

### FOR 1904.

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OFFICE OF THE STATE COAL MINE INSPECTOR,  
SALT LAKE CITY, UTAH,  
December 31, 1904.

To His Excellency, Governor of the State of Utah.

Sir:—In compliance with the requirements of the Act of March 14, 1901, relative to the Mine Inspector's Report of the Coal and Hydro-Carbon Mines and mining, I have the honor to submit to you the 9th annual report of this department.

The statistical report has been so arranged as to accord with the calendar year, and that part which is devoted to the inspection of the mines extends from Dec. 31st, 1903, to Dec. 31st, 1904. It contains tables and statistics showing the location, total number of tons of coal mined, number of days worked, number of employees, number of accidents and the number of pounds of powder used.

The amount of coal produced during the year 1904 was 1,563,274 short tons, which is 198,904 tons less than the previous year.

The reason for this diminution in the output of coal is that, owing to the strike of 1903. Two-thirds of the mi-

most employes of the coal mines in 1914 had never worked in coal mines before and they had to learn the business, how to mine the product and take care of themselves. It readily can be seen that this lessening of the production doubles the work of the mine officials and the mine inspectors in keeping the mines in a safe condition and in guarding against accidents.

The amount of coal produced was 155,007 short tons. The number of employees in and about the coal mines is 2,255 and the number employed in the hydro-carbon mines is 150.

The average amount of coal produced per man in and about the coal mines was 706 short tons.

The number of fatalities for every one thousand men employed was four. The amount of coal mined for each life lost was 173,637 short tons. The amount of black powder used was 257,254 pounds and the amount of giant powder used was 70,009 pounds. The State produced coal to the value of \$2,345,061.

I cordially commend the manner, not only with which the operators have furnished me with an account of their productions, but with which they have otherwise assisted me in my labors, and complied with all suggestions, which the duties of my position required me to make to them.

A few of the large producers have with commendable forethought and sagacity, begun and continued the operation of their properties upon intelligent and scientific methods, and their reward is apparent, not only in their present output, but in the present condition and future capacities of their great properties.

The present immense production and ultimate possibilities of the great metaliferous mines in Utah, are matters of common knowledge and every day talk.

There are comparatively few, even, of our own citizens, who appreciate the extent and value of our coal and hydro-carbon deposits, indeed we can scarcely comprehend the vast possibilities which a judicious appropriation of our great material advantages show.

With the production of this great wealth, the utilizing of our inexhaustible iron deposits, and the economical productions of our metaliferous ores, all depend in a greater

or less degree upon our coal fields. Who can measure the future of our great coal mines?

I WOULD SUGGEST to the Honorable Legislature of Utah, which will meet in January, that they make an amendment to the Coal and Hydro-Carbon Mining Laws of the State of Utah, as follows: That there shall not be any explosive oil used or taken into the coal and hydro-carbon mines for lighting purposes, and oil shall not be stored or taken into the mines in quantities exceeding five gallons. The oiling or greasing of cars inside of the mines is strictly forbidden unless the place where said oil or grease is used is thoroughly cleaned at least once every day to prevent the accumulation of waste oil or grease on the roads or in the drains at that point. Not more than one barrel of lubricating oil shall be permitted in the mine at any one time. Only a pure animal or pure cotton-seed oil or oils, that shall be as free from smoke as pure animal or pure cotton-seed oil, shall be used for illuminating purposes in any mine. Any person found knowingly using explosive or impure oil, contrary to this section, shall be prosecuted as provided for in Section 16 of Coal Mining Laws of Utah.

My reasons for the above suggestion, is that, men employed in the mines are allowed to use explosive oils or what we term black oil, as there is no law to prevent it. By using the above oil the air in the mine becomes poisonous to the health of the miners. The air in our mines become vitiated by the unnecessary use of powder for the blasting of coal, as in some of our large mines they are shooting and using powder in one hour after they start to work on the shift, so there is only about one hour in the day that can see the face, roof and sides of their working places. The other seven hours their places are so smoky that they cannot see the roof or tell when the rock becomes dangerous. The above mines which I speak of, are using from 65,000 to 116,000 pounds of powder per year, so it makes it impossible to keep the air in these mines clear from smoke. We have at present three to four times the amount of air in these mines that the law calls for, and still we have our mines full of smoke. Furthermore we have two-thirds more accidents in these mines, that do the shooting at any time of the day than we do where the company has a rule that all the shooting must be done after the



men are all out of the mine. To comply with the above I would suggest that you give more power to the State Inspector, the amendment to read as follows: Whenever the Mine Inspector discovers that the air in any mine is becoming vitiated by unnecessary blasting of the coal, he shall have the power to regulate the use of the same, and to designate at what hour of the day blasting may be permitted.

Hoping that your Honorable Body will comply with the above as it is really necessary for the safety and health of the miners.

Very respectfully,

GOMER THOMAS  
State Coal Mine Inspector.

**TABLE SHOWING THE COAL PRODUCTION IN THE STATE  
OF UTAH FROM 1876 TO 1904, BOTH INCLUSIVE.**

YEAR	No. of Tons Produced.	Gain, Tons	Loss, Tons
1876.....	50,400	.....	.....
1877.....	50,400	.....	.....
1878.....	67,200	16,800	.....
1879.....	225,000	157,800	.....
1880.....	225,000	.....	.....
1881.....	225,000	.....	.....
1882.....	250,000	25,000	.....
1883.....	250,000	.....	.....
1884.....	250,000	.....	.....
1885.....	213,120	.....	36,880
1886.....	200,000	.....	13,120
1887.....	180,020	.....	19,980
1888.....	259,501	79,500	.....
1889.....	236,651	.....	22,850
1890.....	318,159	81,508	.....
1891.....	371,045	52,886	.....
1892.....	361,314	.....	9,731
1893.....	418,049	56,735	.....
1894.....	447,276	59,227	.....
1895.....	172,958	.....	274,328
1896.....	503,243	330,285	.....
1897.....	582,092	78,849	.....
1898.....	673,297	91,205	.....
1899.....	878,122	204,826	.....
1900.....	1,233,978	456,856	.....
1901.....	1,382,470	148,492	.....
1902.....	1,641,436	258,966	.....
1903.....	1,762,178	120,742	.....
1904.....	1,563,274	.....	198,904

**PRODUCTION OF COAL, COKE AND ASPHALTUM. IMPORTED,  
EXPORTED, AND CONSUMPTION OF SAME  
IN UTAH FOR 1904.**

	Bituminous.	Coke.	Gilsonite.
Production in Utah .....	1,563,274	185,007	.....
Imported into Utah .....	357,444	.....	.....
Total .....	1,920,718	.....	.....
Export from Utah .....	422,361	37,001	.....
Consumed in Utah .....	1,508,357	148,006	.....

**TOTAL PRODUCTION OF COAL IN UTAH DURING YEAR 1904  
BY COUNTIES.**

Carbon .....	1,408,372
Summit .....	68,719
Sanpete .....	6,033
Emery .....	2,750
Uintah .....	12,200
Iron .....	
Other Small Mines .....	65,200
<b>Total .....</b>	<b>1,563,274</b>

**COAL PRODUCED IN THE SEVERAL MINES IN UTAH FOR 1904**

NAME OF MINE	OPERATED BY	No. of Short Tons
Winter Quarters No.1 .....	P. V. Coal Company .....	323,351
Winter Quarters No. 2 .....	P. V. Coal Company .....	
Winter Quarters No. 3 .....	P. V. Coal Company .....	
Clear Creek .....	P. V. Coal Company .....	456,027
Castle Gate .....	P. V. Coal Company .....	221,347
Sunnyside .....	Utah Fuel Company .....	407,147
Grass Creek .....	Grass Creek Coal Company .....	37,573
Wasatch .....	Weber Coal Company .....	31,146
Thomas .....	Sterling Coal & Coke Company .....	5,633
Wales .....	W. P. Davis Coal Company .....	400
Huntington .....	P. V. Coal Company .....	750
Deseret .....	Kemmerer Coal Company .....	1,150
Cedar Creek .....	Cedar Creek Coal and Coke Co .....	850
Aberdeen .....	Whittimore & Ballinger .....	500
Castle Valley Mines .....		
Other Small Mines .....		65,200
<b>Total .....</b>		<b>1,563,274</b>

TABLE SHOWING NUMBER OF TONS PRODUCED: NUMBER OF DAYS WORKED: NUMBER OF MEN EMPLOYED: NUMBER OF PERSONS KILLED AND INJURED, AND NUMBER OF POUNDS OF POWDER USED, ETC.

NAME OF MINE.	COUNTIES.	Short Tons of Coal	Tons of Coke.	Days Worked.	Men Employed.	Fatal Accidents.	Non-Fatal Accidents.	Pounds of Powder.	Pounds of Dynamite.	Mules and Horses.	Steam Boilers.	Locomotives.	Coke Ovens.
Winter Quarters.....	Carbon.....	323,351	.....	295	435	3	33	63,800	.....	24	8	1	204
Castle Gate.....	".....	221,347	56,627	305	530	2	7	.....	34,509	17	7	.....	.....
Clear Creek.....	".....	458,127	.....	298	405	1	5	116,300	.....	25	8	.....	.....
Sunnyside.....	".....	407,147	128,380	300	595	2	10	.....	35,500	34	14	1	400
Aberdeen.....	".....	500	.....	70	2	.....	.....	275	.....	4	.....	.....	.....
Grass Creek.....	Summit.....	37,573	.....	280	51	.....	.....	15,000	.....	10	.....	.....	.....
Wasatch.....	".....	31,148	.....	238	46	.....	1	3,275	.....	11	3	.....	.....
Huntington.....	Emery.....	750	.....	150	6	.....	3	.....	.....	1	4	.....	.....
Deseret.....	".....	1,150	.....	300	4	.....	.....	350	.....	.....	.....	.....	.....
Cedar Creek.....	".....	850	.....	70	5	.....	.....	375	.....	.....	.....	.....	1
Huntington Creek.....	".....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Thomas.....	Sanpete.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wales.....	".....	5,633	.....	300	16	.....	.....	1,750	.....	2	1	.....	.....
Anthracite Coal Co.....	Iron.....	400	.....	135	4	.....	.....	300	.....	4	.....	.....	.....
Castle Valley S. Mines.....	".....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uintah Mines.....	Uintah.....	12,200	.....	175	23	.....	.....	2,000	.....	10	.....	.....	.....
Other Small Mines.....	.....	65,200	.....	175	90	1	.....	3,600	.....	10	.....	.....	.....
Total.....	.....	1,563,374	185,007	3,071	2,215	9	61	207,025	70,009	152	35	2	605

TABLE SHOWING TONAGE BY COUNTIES FOR 1904, COMPARED WITH 1903.

COUNTIES.	Tons For 1904.	Tons For 1903.	Gain.	Loss.
Carbon.....	1,408,372	1,001,037	.....	187,000
Summit.....	68,719	66,411	2,308	.....
Sanpete.....	6,033	10,450	.....	4,417
Emery.....	2,760	13,300	.....	10,540
Uintah.....	12,200	10,300	1,900	.....
Iron.....	.....	1,000	.....	1,000
Other Small Mines.....	66,300	61,700	4,600	.....
Total.....	1,563,374	1,769,174	4,700	205,812
Loss Short Tons.....	.....	.....	.....	104,144

TABLE SHOWING PRODUCTION OF COAL IN UTAH DURING YEAR 1904, ETC.

Countries.	Total Pro- duction in Short Tons.	Total Pro- duction of Coke.	Average Per Ton.	Days Worked.	Employees No. of.
Carbon.....	1,408,372	185,007	\$1.20	1,268	1,987
Summit.....	68,719	.....	1.25	498	100
Sanpete.....	6,033	.....	2.00	435	15
Emery.....	2,760	.....	1.00	520	20
Uintah.....	12,200	.....	1.50	350	23
Iron.....	.....	.....	1.50	.....	90
Other Small Mines.....	63,200	.....	1.50	.....	.....
Total.....	1,563,274	185,007	\$1.50	8,071	2,215

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN THE STATE AND THE NUMBER OF  
EACH THAT WERE IN OPERATION DURING 1904

COUNTIES.	Number of Mines which Employed More than 6 Men.	Number of Mines which Employed Less than 6 Men	Total by Counties	Number of Large Mines in Oper- ation in 1904.	Number of Small Mines in Oper- ation in 1904.	Total Number of Mines in Oper- ation in 1904.
Carbon.....	8	50	58	8	50	58
Summit.....	2	3	5	2	3	5
Sanpete.....	1	5	6	1	5	6
Uintah.....		34	34		34	34
Emery.....		42	42		42	42
Iron.....		10	10		10	10
Total.....						170

**TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES  
IN 1904 COMPARED WITH 1903.**

COUNTIES.	1903	1904	Gain	Loss
Carbon.....	1,927	1,967	40	.....
Summit.....	84	100	16	.....
Sanpete.....	35	20	.....	15
Uintah.....	22	23	1	.....
Emery.....	28	15	.....	13
Iron.....	.....	.....	.....	.....
Small Mines.....	90	90	.....	.....
Total .....	2,182	2,215	57	28





**TABLE SHOWING NUMBER OF FATAL, SERIOUS AND NON-SERIOUS ACCIDENTS AND THE COUNTY IN WHICH THE SAME OCCURRED DURING 1904.**

COUNTIES	Fatal	Serious	Non-Serious	Total
Carbon .....	8	9	47	64
Summit .....		1	2	3
Emery .....			3	3
Sanpete .....				
Wasatch .....	1			1

**TABLE SHOWING CASUALTIES OF 1904 COMPARED WITH 1903.**

COUNTIES	1903			1904				
	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	Gain	Loss
Carbon .....	6	30	36	8	56	64	28	.....
Summit .....		4	4	1	2	3	.....	1
Sanpete .....	1	1	2	.....	3	3	1	.....
Wasatch .....				1	.....	.....	1	.....

**TABLE SHOWING THE NUMBER OF MINES EMPLOYING THE  
DIFFERENT METHODS OF VENTILATING AND THE  
KIND OF OPENING.**

COUNTY	Character of Opening			Mode of Ventilation		
	Drift	Slope	Total	Fan	Furnace	Natural
Carbon .....	56	2	58	9	.....	49
Summit .....	8	2	10	2	.....	8
Emery .....	34	.....	34	.....	.....	42
Sanpete .....	4	2	6	.....	1	5
Uintah .....	34	.....	34	.....	.....	34
Iron .....	10	.....	10	.....	.....	10

TABLE SHOWING LOCATION, ETC., OF MINES IN UTAH.

NAME OF MINE	NAME OF OPERATOR	COUNTY	NAME OF SUPT.	P. O. ADDRESS	NAME OF RAILROAD
Winter Quarters No. 1	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R'y
Winter Quarters No. 4	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R'y
Winter Quarters No. 5	P. V. Coal Co.	Carbon	T. J. Parmley	Scofield	R. G. W. R'y
Clear Creek	P. V. Coal Co.	Carbon	Wm. Forrester	Clear Creek	R. G. W. R'y
Castle Gate	P. V. Coal Co.	Carbon	David Crow	Castle Gate	R. G. W. R'y
Sunnyside	Utah Fuel Co.	Carbon	Robert Howard	Sunnyside	R. G. W. R'y
Aberdeen	Whittemore & Ballinger	Carbon	A. Ballinger	Price	R. G. W. R'y
Grass Creek	Grass Creek Coal Co.	Summit	John E. Pettit	Coalville	U. P. R'y
Wasatch	Weber Coal Co.	Summit	T. J. Lewis	Coalville	U. P. R'y
Huntington	P. V. Coal Co.	Emery	Wm. Forrester	Clear Creek	R. G. W. R'y
Deseret	Kemmerer Coal Co.	Emery	Thos. D. Reese	Wales	R. G. W. R'y
Cedar Creek	Cedar Creek Coal Co.	Emery	Wm. Howard	Huntington	R. G. W. R'y
Thomas	Sterling Coal Co.	Sanpete	S. H. Keer	Manti	R. G. W. R'y
Huntington Creek	Don C. Robinson Coal Co.	Emery	D. C. Robinson	Salt Lake City	Sanpete Valley R'y
Anthracite Coal Co.	Anthracite Coal Co.	Iron	Robert Kerker	Salt Lake City	

## WINTER QUARTERS MINE

This mine is owned and operated by the Pleasant Valley Coal Co. and is situated about 116 miles south of Salt Lake City and about a mile and a quarter from Scofield on the Colton and Scofield branch of the R. G. W. R. R.

Number 1 Mine is worked by a drift and is ventilated by artificial ventilation, the power used for haulage is electricity, comprising one electric locomotive and three electric hoists. All main entries are lighted by electric lights.

The production of this mine during 1904 was 323,351 short tons of coal, consuming 63,600 pounds of powder and employing 435 men and 24 horses, working 295 days. The coal in this mine is all mined with picks.

I made my first official visit of inspection to this mine on Jan. 8th and 9th, 1904. I went through nearly all the mine, found it fairly well ventilated, well timbered and all places kept damp, everything running smooth with the exception of a little trouble with the new men that were employed after the strike.

My second official visit to this mine was on May 24th and 25th. I went through the mine and found it in fairly good condition and all places well timbered, watered and ventilated. The conditions of this mine were far better than on my last visit.

My third official visit to this mine was on July 15th. I found the mine in about the same condition as on my last visit. I visited the mine again and found everything working O. K. On Sept. 7th I was called to this mine to attend the inquest of T. N. Hutchinson and Arthur Bishop, who came to their death by coal falling on them in No. 1 Mine, at Winter Quarters, between rooms 20 and 21 on the seventh level off the 8th raise. I tried to get to see the place of the accident, but on account of that part of the mine having taken a squeeze which made it unsafe to go into for several days, so we had to take the evidence of the miners who were close by at the time of the accident, and the verdict was as follows:

"That the said Arthur Bishop and Thos. W. Hutchinson came to their death by negligence by not taking proper precautions in protecting themselves in being in a part of

the mine they should not have been at the time. I made several other visits to this mine and found the mine in good and safe condition. I am pleased to say that Winter Quarters Mine No. 1 is in better condition than it has been during the year 1904.

### SUNNYSIDE MINES NOS. 1 and 2.

These mines are owned and operated by the Utah Fuel company and are situated about seventeen miles east of Mounds, on a branch of the Rio Grande Western R. R.

No. 1 Mine is worked by a slope. Hauling is done by steam and horses. The power used in taking the water out is compressed air. Artificial ventilation by fan producing 51,460 cubic feet of air at the intake, and 55,335 at the outlet.

No. 2 Mine is a drift. Hauling is done by electric locomotive and two electric hoists. The mine is ventilated by artificial ventilation.

Fan producing 53,130 cubic feet per minute at the intake, 66,675 at the outlet.

Sunnyside has the appearance of a modern western town. It has 118 five and six room cottages and 20 two story houses, 10 double houses and one commodious company boarding house, the latter for the accommodation of single men. The price of board is 75 cents per day. There are three other hotels owned by private parties and about half as many houses owned by the miners as by the company. The improvements during the year 1904, are, an addition of 20 houses and also the addition of 100 coke ovens, which now makes a total of 400 coke ovens.

The output of the Sunnyside Mines Nos 1 and 2, for the year 1904 is as follows: Coal, 407,147 short tons, average price per ton at mine is \$1.20; 128,380 short tons of coke were produced; number of days worked 300; number of men employed in and around the mine 595; number of fatal accidents were two; number of horses is 34; number of steam boilers 14; number of locomotives is 1; and 400 coke ovens.

My first official visit of inspection to the Sunnyside Mines was on March 8th, 9th, 10th, 11th, 12th, 1904. On the 8th I went through No. 1 Mine and found it in good

condition, good ventilation, all places well timbered, watered and kept damp. On the 9th I started to make an inspection of No. 2 Mine, accompanied by the Mine Foreman, about 8:30 a. m. as I was getting near the outside of the inside sidetrack, we met a man running towards us, we stopped him, he told us that there was a man killed at the other end of the sidetrack, we went at once to the place of the accident, they were just taking Willard Hitchcock from under the cars. I examined the body and found that he was dead. I looked over the place of accident, there were three tracks running parallel.

The men that were standing around at the time of the accident told me that Hitchcock was standing on the middle track, the locomotive was coming on one of the sidetracks, when he saw the locomotive he jumped onto the other sidetrack, at the same time there was a trip coming down the second Butt entry, as it came around the curve and onto the straight track, where Hitchcock was standing the first car struck him down and ran over him, the second car ran on top of him. When he was taken out from under the second car he was dead.

We held the inquest at noon on the same day. The verdict of the jury was as follows: "That Willard Hitchcock came to his death by a loaded car running over him; no blame is attached to any person or persons. The verdict rendered is accidental death." I must say that this is one of those accidents that we cannot account for, as Hitchcock saw the locomotive coming on the other track, and he also knew that the loaded cars came down on the other sidetrack from the Butt entry. If he had not moved he would have been all right. All the sidetracks were lighted with electric lights. The cars that came down from second Butt entry were lowered by electric hoist. The next day I finished my inspection of the mine.

I visited the Sunnyside Mine May the 13th and 14th. I went through No. 1 Mine May 13th and found it in fairly good condition, all places well timbered, watered, and kept damp, with good ventilation.

I found in looking over the report book that a few days before my visit they had found a considerable amount of gas in one of the pillars, that they were taking out in the second right entry. A cave had taken place at this

time, which caused the gas to escape. On this morning the fire boss came out and reported that he had found a trace of gas in this pillar and that the roof was caving. The mine foreman did not feel satisfied with the report, he then started down the mine and investigated the matter himself. When he got to the place he found that a cave had taken place and a large amount of gas had escaped, which made it very dangerous at this time.

If the men had come in before the mine foreman the chances are that they would have come in contact with the gas with their naked lights, there would have been a great explosion and it would have taken place about the time the men were starting to work.

I would like to make one suggestion, that is, to have all Fire Bosses do away with the Davie Lamp and use the Wolf Lamp altogether as in case of this kind it takes about  $3\frac{1}{2}$  per cent gas before you can detect it in the Davie Lamp, where if you had the Wolf Lamp you would detect it as low as  $1\frac{1}{2}$  per cent.

The same amount that he saw this morning in the Davie Lamp would have showed big in the Wolf Lamp, he would have taken more precaution and he would have seen at once that there was plenty of gas to cause him to take more care.

I do not want to say for a moment that this Fire Boss was in any way careless as at this moment he found a trace with a Davie Lamp. The same trace would have looked much larger in the Wolf Lamp.

It was a miracle that the Mine Foreman placed a doubt in his mind over the condition of this report. If he had not done so the men would have gone down to their working places with their naked lights.

I have a lightweight Wolf Lamp made special for the Mine Foreman and the Fire Bosses. I told Mr. Sharp that I would send it down so that they could give it a fair test by the side of the Davie Lamp. My opinion is that the Wolf Lamp is the only safety lamp and I would like to see you order about a dozen of them for the fire bosses at Sunnyside and Castle Gate. One thing I can say about the Wolf Lamp is that it gives a far better light and cannot be put out in a current of air.

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As I went through the return air way in No. 1 Mine, I found the timber, a little below the fan,, in a very bad condition, with props placed along under the center of the cross pieces. If there should be anything unusual take place in the mine these props would be easy knocked out and the result would be a very large cave, which would close up the return air-way, also the traveling way. I would suggest that this be retimbered at once.

As I went through the crushers I found them to be full of dust and in a dangerous condition. If any naked light should be taken into the breaker there would be a great explosion as there is enough dust lying around to blow it up and lay it flat on the ground. I would further suggest that you put in small sprinklers, one at the head of the chute, one at each roller and so on throughout the building, so that the dust would be kept damp.

I visited the Sunnyside Mine July 8th and 9th. I went through No. 1 Mine and found it in a good and safe condition, with all places well timbered, with good ventilation.

I would suggest that you would make two escapement ways, one on each side of the mine, as I do not think the slope and man-way now used would be very safe proposition in case of an accident, as the ground that overlays the timber is very loose, and would become dangerous if the timbers were knocked out, and close up the two openings, which would form a trap for the men on the inside.

There is one thing I would like to state, as I looked over the first right, I find that the haulage is very long one and make it a very hard proposition, as it takes five horses on the level to take the coal away from the inside drivers. If I had the say-so I would suggest that you put in an electric locomotive to haul the coal from the level. This would make it very convenient for the hauling of the coal. It would make a big increase in the output and cheaper coal. Excuse me for the last suggestion. I have no right to interfere. I went through No. 2 and found everything in good condition. I must congratulate the Superintendent and Mine Foreman of both mines as they have done their best to comply with the State Laws.

I examined the scales that they use for weighing the coal and found them to be correct.

My fourth official visit was on August 23rd to the 26th. I went through No. 1 and 2 Mines and found them in a fairly good condition.

My next visit was on October 11th to the 15th. I went through No. 1 and 2 Mines. I went through No. 1 Mine on the 11th and found the mine well timbered, kept damp and good ventilation, fan running 42 rev. per minute, producing 70,450 cubic feet of air, 216 men working on the inside.

I went through No. 2 Mine and found it in a fairly good condition, fan running at the rate of 63 rev. per minute, producing 40,100 cubic feet of air. 138 men working on the inside, everything working smooth.

### CASTLE GATE MINE.

The Castle Gate Mine is the property of the P. V. Coal Co., and is located 110 miles southeast of Salt Lake City, on the main line of R. G. W. R. R.

The amount of coal produced in 1904 was 220,347 short tons of coke, made from Sunnyside coal, 56,627 short tons, consuming 34,347 pounds of dynamite, employing 530 men in and around the mine and 17 mules, working 305 days, two fatal accidents, seven non-fatal. The mine is worked by a drift and is ventilated by artificial ventilation. All the main haulage ways are lighted by electric light. There are telephone connections on the main entry with the company's office.

My first official visit to this Mine was on Feb. 1st to 5th, 1904.

I went through the mine and found the mine, in general, in a good condition, with exceptions of having a little trouble with the new men in learning them how to dig coal and take care of themselves.

The mine was well watered and kept damp, the timbering was good in all places, and the ventilation was good.

March 4-5, 1904—On this visit I just made an inspection of the main traveling roads.

On my official visit to the Castle Gate Mine on the 22nd and 23rd of April I went through the mine and found it in good and safe condition and all places well timbered,

watered and well lighted, with good ventilation and everything working O. K.

My next official visit was on Sept. 14th, also on the 20th and 27th of Sept. 1944. I went through the mine and found it to be in fairly good condition, with the exception of a few long seams which did not have the amount of air that was necessary. All places were well timbered and watered, with the exception of the main entry which was a little dry. I made several other visits that were not official. I examined the scales on each visit and found them to be correct.

#### UTAH FUEL COMPANY OFFICERS.

E. T. Jeffrey, president, New York.

C. H. Schlacks, vice-president, Denver, Colo.

Stephen Little, secretary, New York.

Jesse White, treasurer, New York.

W. F. Colton, assistant treasurer, Salt Lake City, Utah.

J. F. Evans, auditor, Salt Lake City, Utah.

H. G. Williams, general manager, Salt Lake City, Utah.

S. Kelzie Smith, general superintendent, Castle Gate, Utah.

W. H. Myers, general sales agent, Salt Lake City, Utah.

Robert Howard, mine superintendent, Sunnyside, Utah.

N. W. Musgrave, superintendent coke ovens, Sunnyside and Castle Gate, Utah.

David Crow, mine superintendent, Castle Gate Utah.

T. J. Parmley, mine superintendent, Winter Quarters, Utah.

Wm. Forrester, mine superintendent, Clear Creek, Utah.

Following is a list of all machinery now in use in the operation of Utah Fuel company mines at Sunnyside, Utah:

## NO TWO MINE, WATER CANON OPENING.

One Upright Boiler, size 84x36 inches, 52 1½-inch Flues, 12 H. P. Manufactured by T. M. Naugle, Erie, Pa.

One W. D. Cole Fan., dia. 10 feet. Run by engine 6x10 inches, Rev. 40 P. M.

## NUMBER TWO MINE.

One W. B. Cole Fan, dia. 16 feet. Run by W. B. Cole engine 10x14 inches. Speed 60 Rev. P. M.

One boiler 16 feet by 66 inches, 91 3-inch flues.

One Economic Boiler, 38 3-inch flues, and 20 4-inch flues.

One Economic Boiler 52 3-inch flues, and 24 4-inch flues.

One Electric Locomotive, operated by two G. E. No. 53 Motors No. 1686.

Classification L-M-102-B-2, Volts 500, Draw Bar Pull 4,500 pounds.

Speed, 7½ miles per hour. General Electric Co. Special 37013.

Two Electric Hoists, operated by G. E. Motors No. 2000, 500 volts, horse power 110. Mfg. by Denver Engineering Works.

## COKE OVENS.

Three Larry Cars, operated by G. E. Motors No. 53, 27 Horse Power.

## POWER HOUSE.

One Air Compressor. Built by the Norwalk Iron Works Co. Size of Steam and Air Cylinder, 24x26x20, No. 1245.

One Air Compressor. Built by the Ingersol Sargeant Drill Co., New York. Size of cylinders, 24x30.

One continuous current generator, No. 48291, Spec. 40480, type M. P., Class 6-250-150, Form H. Ampers 435,

speed 150 R. P. M. Volts, no load, 525; full load, 575. Mfg. by General Electric Co. Operated by Allis Chalmers Corliss Engine, size 20x36. Direct connected.

One Electric Generator, three phase alternating current. Type A. T. No. 2482. Form A. Volts, full load, 2300; no load, 2300. Ampers, 13. Speed, 900 R. P. M. Mfg. by General Electric Co.

One Exciter. Mfg. by Thompson Houston Electric Co., Lynn, Mass.

One Incandescent Dynamo. Volts, 110. Speed, 2400 R. P. M. Class 3-S No. 3142. Operated by one Armington and Sims Engine. Size 12x12. Speed 300. Belt connected.

Five boilers, size 16 feet by 66 inches. Mfg. by Freeman Boiler Mfg. Co.

Four boilers, 16 feet by 66 inches. Mfg. by Kewanee Boiler Works.

One boiler, size 16 feet by 60 inches. Mfg. by Kewanee Boiler Works.

All the above boilers have 72 4-inch flues.

One Worthington Plunger Pump, size 10x5½ inches by 10. (Boiler.)

One Worthington Plunger Pump, size 16x5½ inches by 10. (No. 2 mine.)

One Worthington Piston Pump, size 7-2x8-2x10 (City Water.)

One 500 H. P. Cochran Heater. Mfg. by the Harrington Safety Boiler Works.

## CRUSHING PLANT.

Three Double Engines. Mfg. by Houston, Stanwood & Gamble Co. Numbers 4407, 4408 and 4419. Size 14x20 inches. Belt connected to three extension top 60-inch disintegrators for making slack.

Two engines. Built by Chandler and Taylor of Indianapolis. Size 16x20 inches. No. 5861, and 13x16 inches No. 1701. Connected to two sets of slack elevators and four pair of crushing rolls. Size of rolls, 30x36-inches.

## NUMBER ONE MINE.

One 24-foot fan, run by engine 20 by 30 inches. Built by Vulcan Iron Works. Speed 46 R. P. M.

One Worthington Pump. Size 18-2x7 $\frac{3}{4}$ x10 inches.

Two Worthington Pumps, size 6x4x6.

One Steam Hoist Engine, size 24x48 inches. Built by Webster Camp and Land, Acron, Ohio.

## MACHINE SHOP.

One Upright Engine, size 9x10 inches. Mfg. by American Fire Engine Co., New York.

One Lathe 26-inch swing. Mfg. by Manning, Marcell & More.

One Drill Press. Mfg. by American Tool Co., Cincinnati.

One Forbes Pipe Cutter.

One Machine Shop Saw.

One Worthington Plunger Pump. Size 6x4x6-inches. (Reservoir.)

One Dean Pump. Size 8x16 inches. (Deep well.)

One Snow Duplex Pump. Size 5x4x6 inches.

Trusting this will answer your purpose, I am

Yours truly,

A. E. PIPE, M. M.

Following is inventory of machinery at Winter Quarters:

## POWER STATION.

Two McEwan engines, H. P. 250, direct connected to two Thompson's Ryan dynamos, 175 K. W., 275 amps at 550 volts.

One Allis Corliss Engine, H. P., 150, belted to two 220-volt, 175 Amp. G. E. dynamos.

Seven Kewance high pressure boilers.

## VENTILATION.

No. 1 fan. 1, 125 H. P., Chambersburg engine, direct connected to 8x14 Capell Steel Fan.

No. 4 Fan 1. 60 H. P. Compound Wound Motor belted to 4x8 Capell Fan.

#### HAULAGE.

Two Lidgerwood Electric Hoists. H. P., 150.  
One Denver Engine Company's hoist. H. P., 150.  
One electric locomotive. D. B., pull 4200 pounds, trip 32 cars.

#### DRAINAGE.

Two 7x8 triplex Denning electric pumps.

#### SPEINKLING.

One 14x12x8. Knowles steam pump.  
Yours truly,

**T. J. PARMLEY,**  
Mine Superintendent.

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Salt Lake City, May 2, 1904.

Mr. H. G. Williams, General Manager Utah Fuel and P. V. Coal Co., Salt Lake City, Utah.

Dear Sir:—In accordance with Section 11 of the Coal and Hydro-Carbon Mining Laws of the State of Utah, I herewith hand you my official report of inspection of your mines at Castle Gate, Sunnyside, Winter Quarters and Clear Creek which I visited during the quarter ending March 31, 1904.

With the exception of Clear Creek, which I found a little dry in places, I informed the Superintendent of the same and he promised to see to it at once, I found all the mines in a good condition, well timbered, watered and ventilated. On the morning of April the 9th I was making my inspection of No. 2 Mine, I was going along the main entry and as I entered the sidetrack at the bottom of the 2nd butt entry I met a man running out along the entry and

he told me that there had been a man killed at the other end of the sidetrack. From here I hurried on to the place of accident and saw that they had just taken the body of Willard Hitchcock from under the car. I examined the body carefully and saw that he was dead. I then carefully looked over the place and inquired into the cause of the same and found that Hitchcock was standing on the loaded track where the cars were landing from the second butt entry and a loaded trip come down out of the second butt entry on the track of the empty cars and on the track where Hitchcock was standing, striking him down and running over his body, killing him instantly. The accident took place about 8:30. I then went on through the mine and came out. There was an inquest called which was to take place at noon before William Hill, justice of the peace of Sunnyside precinct. I heard the evidence taken and I also questioned nearly all the witnesses and I came to the conclusion that it was a pure accident.

Yours very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

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Salt Lake City, Utah, May 16, 1904.

H. G. Williams, General Manager Utah Fuel and P. V. Coal Co., Salt Lake City, Utah.

Dear Sir:—In accordance with Section 11 of the Coal Mining Laws of the State of Utah, I herewith hand you my report of my official visit to the Castle Gate and Sunnyside Mines.

I visited the Castle Gate Mine on the 22nd and 23rd of April. I went through the mine and found it in good and safe condition and all places well timbered, watered and kept damp, with good ventilation and everything working O. K.

I visited the Sunnyside Mine May the 13th and 14th. I went through No. 1 Mine May 13th and found it in fairly good condition, all places well timbered, watered and kept damp, with good ventilation.



I found in looking over the report book that a few days before my visit they had a considerable amount of gas in one of the pillars, that they were taking out in the second right entry. A cave had taken place at this time, which caused the gas to escape. On this morning the fire boss came out and reported that he had found a trace of gas in this pillar and that the roof was caving. The mine foreman did not feel satisfied with the report and he then started down the mine and investigated the matter himself. When he got to the place he found that a cave had taken place and a large amount of gas had escaped, which made it very dangerous at this time.

If the men had come in before the mine foreman the chances are that they would have come in contact with the gas with their naked lights, there would have been a great explosion and it would have taken place about the time the men were starting to work.

I would like to make one suggestion, and that is, to have all the fire bosses do away with the Davie Lamp and use the Wolf Lamp altogether as in case of this kind it takes about 3 1-2 per cent gas before you can detect it in the Davie Lamp, where if you had the Wolf Lamp you would detect it as low as 1 1-2 per cent.

The same amount that he saw this morning in the Davie Lamp would have showed big in the Wolf Lamp, he would have taken more precaution and he would have seen at once that there was plenty of gas to cause him to take more care.

I do not want to say for a moment that this fire boss was in any way careless as at this moment he found a trace with a Davie Lamp. The same trace would have looked much larger in the Wolf Lamp.

It was a miracle that the mine foreman placed a doubt in his mind over the condition of this report. If he had not done so the men would have gone to their working places with their naked lights.

I have a lightweight Wolf Lamp made special for mine foreman and fire boss. I told Mr. Sharp that I would send it down so that they could give it a fair test by the side of the Davie Lamp.

My opinion is that the Wolf Lamp is the only safety lamp and I would like to see you order about a dozen of

them for the fire bosses at Sunnyside and Castle Gate. One thing I can say about the Wolf Lamp is that it gives a far better light and cannot be put out in any current of air.

As I went through the return air way in No. 1 Mine I found the timber a little way below the fan, in a very bad condition, with props placed along under the center of the cross pieces. If there should be anything unusual take place in the mine these props would be easily knocked out and the result would be a very large cave, which would close up the return air way, also the traveling way. I would suggest that this be retimbered at once.

As I went through the crushers I found them to be full of dust and in a dangerous condition. If any naked light should be taken into the breaker there would be a great explosion as there is enough dust lying around to blow it up and lay it flat on the ground. I would further suggest that you put in small sprinklers, one at the head of the chute, one at each roller and so on throughout the building, so that the dust would be kept damp.

Hoping that you will see fit to comply with the above requests, as I think it is really necessary, I remain,

Yours very respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

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Salt Lake City, Utah, June 7th, 1904.

H. G. Williams, General Superintendent Utah Fuel Co.,  
Salt Lake City, Utah.

Dear Sir:—In accordance with Section 11 of the Coal and Hydro-Carbon Mining Laws of the State of Utah, I herewith hand you my official report of inspection of your mines at Winter Quarters and Clear Creek. I made my official visit to Winter Quarters on May 24th and 25th. I went through the mine and found it in a fairly good condition with all places well timbered, watered and well ventilated.

The conditions of this mine on this visit were far better than on my last visit. On the 26th and 27th of May I

made an inspection of the Clear Creek Mine and found it in a little better condition than on my last visit, that is, in regard to dust. I still find a few places dry and dusty. I find the timber in both openings for several hundred feet thickly covered with dust, also the boards that the signal wires are nailed to are in good condition. I find the timber in these fairly good, the ventilation is good with the exception of a few places. In the dip I would like to call your attention to your general mining rules in regard to shot firing and the tamping of holes, mining of the coal. I do not wish to say that the mine foreman and shot inspector are neglecting their duty, but I must say that there must be more caution used, and I find too many shots on the solid. I also saw some of the miners tamping with coal dust. I spoke to the mine foreman, shot inspectors and waterman about the above conditions and even went as far as to threaten the law on them, as you know as well as I know that this is something that we must not neglect as this is our main source of danger.

Hoping that you will help me out in enforcing your mining rules in all the mines, I remain,

Yours respectfully,

GOMER THOMAS,  
State Coal Mine Inspector.

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Salt Lake City, Utah, July 19th, 1904.

H. G. Williams, General Manager Utah Fuel and P. V. Coal Co., Salt Lake City, Utah.

Dear Sir:—In accordance with Section 11 of the Coal and Hydro-Carbon Mining laws of the State of Utah, I herewith hand you my official report of inspection of your mines at Sunnyside and Clear Creek.

I visited the Sunyside Mine July the 8th and 9th. I went through No. 1 Mine and found it in a good safe condition, with all places well timbered and with good ventilation.

I would suggest that you would make two escapement ways, one on each side of the mine, as I do not think the slope and the manway now used would be very safe propo-

sition in case of an accident, as the ground that overlays the timber is very loose, and would become dangerous if the timbers were knocked out, and close up the two openings which would form a trap for the men on the inside.

There is one thing that I would like to state, as I looked over the first right. I find that the haulage is a very long one and makes it a very hard proposition, as it takes five horses on the level to take the coal away from the inside drivers. If I had the say-so I would suggest that you put in an electric locomotive to haul the coal from this level. This would make it very convenient for the handling of the coal. It would make a big increase in the output and cheaper coal. Excuse me for the last suggestion. I have no right to interfere. I went through No. 2 and found everything in good condition. I must congratulate the superintendent and mine foreman of both mines as they have done their best to comply with the State Laws.

I visited the Clear Creek Mine on July 12th and 13th. I went through the mine and found it in fairly good condition with the exception of the timbering being too far back from the face of the rooms and a few places I found with bad roofs and no props in the room. The most of the above was on the hill. I found the switches on the foot of the hill and on top of the dip to be dry and dusty. As I stated in my last report I complained in regard to the mine foreman and shot inspectors, especially the one on the hill. On this visit I found the same neglect. I inquired from forty-five to fifty of the miners in regard to the visits of the mine foreman made to their places and they all said he did not make a visit once a month. I also found that the shot inspector on the hill did not make his rounds once every day.

I must insist that the mine foreman make the rounds at least once a week and the shot inspector make his rounds complete once a day. I also called his attention to page 9 of the Mining Laws of the State of Utah whereas it says a report of each and every examination shall be recorded in a book kept for that purpose, signed by the person who made the examination.

I found that this law had been neglected through the mine foreman. I am very sorry that I have to make so



boards that the signal wires are nailed to are in the same condition. I find the timber in these fairly good, the ventilation is good with the exception of a few places. In the dip, I would like to call your attention to your general mining rules in regard to shot firing, tamping of holes and mining of coal. I do not wish to say that the mine foreman and shot inspector are neglecting their duty, but I must say that there must be more precaution used. I find too many shots on the solid. I also saw some of the miners tamping with coal dust.

I spoke to the mine foreman, shot inspectors and watermen about the above conditions, and even went so far as to threaten the law on them, as you know as well as I that this is something that we must not neglect as it is our main source of danger.

My third official visit was on July 12th and 13th, 1904. I went through the mine and found it in fairly good condition with the exception of the timbering being too far back from the face of the room. In a few places I found bad roofs and no props in the room. The most of the above was on the hill. I found that the switches on the foot of the hill and on top of the dip to be dry and dusty. As I stated on my last visit I complained in regard to the mine foreman and shot inspector, especially the one on the hill. On this visit I found the same neglect. I inquired from forty-five or fifty of the miners in regard to the visits of the mine foreman made to their places and they all said that they did not make a visit once a month. I also found that the shot inspector on the hill did not make his rounds once every day.

I must insist that the mine foreman make the rounds at least once a week, and the shot inspector make the rounds complete once each day. I also called his attention to page 9 in the Mining Laws of the State of Utah, whereas it says a report of each and every examination shall be recorded in a book kept for that purpose, signed by the person who made the examination.

I found that this law had been neglected through the mine foreman. I am very sorry that I have to make so many complaints but it is impossible for me to let them pass. If I do so it places us all in a very dangerous position in time.

My fourth official visit was on Sept. 10th, 1904. On this date I went through part of the mine, some of the low coal districts and the main traveling roads. The ventilation was good. The timbering in the rooms was a little too far from the face, the watering of the mine was about the same as on my last visit. My fifth visit was on October 31st, 1904. I found the mine in a little better condition than on my previous visit.

My sixth visit was on Dec. 13th and 14th, 1904. I went through nearly all the dip workings and part of that on the hill. I found many of the main stoppings in the dip leaking and were not built according to the law. By going through the mine I found that all of the day men were using black oil and paying the company \$1.50 per month for the same, taking it in the mines in powder kegs, about three gallons at one time. They stored it on the sidetracks for convenience for the drivers and day men, and when filling their lamps and bottles from the said kegs they spill it all over the coal, ties and timbers, which makes it a very easy matter to kindle a quick fire, as it is kept mostly on the main intakes of the mine. Anyone wanting to be mischievous could take an old lampwick from their lamps and light it and throw it down amidst the oil, by doing so they would have a good fire. Some of the places are so bad that a man needs gum boots to wade through it, so that you can see that it is a waste of company property, leaving alone the dangers that can come from it. In my opinion the miners and laborers in the mine would be far better off by not using this kind of oil as it poisons the atmosphere they breathe in the mine, and also makes it a very dangerous proposition in case of fire. I don't want to say that the men in the mine cannot use this kind of oil; but if used, it should be with the utmost care, as it must not be spattered around the coal and timbers in the mine. The conditions of the above must be changed at once.

#### GRASS CREEK MINE.

This mine is owned and operated by the Grass Creek Coal company, of Salt Lake City, and is situated eight

miles north of Coalville, on the Echo and Park City branch of the Union Pacific.

The mine is worked by a drift, and is ventilated by artificial ventilation. This mine produced 37,573 short tons of coal during 1904, consumed 15,000 pounds of black powder, working 260 full days, employing 54 men and 10 horses. There was one non-fatal accident. Number of steam boilers, three.

The following are the officers of the Grass Creek Coal company:

Joseph F. Smith, president.

W. N. Cluff, vice-president.

Arthur Winters, secretary and treasurer.

John E. Pettit, mine superintendent.

My first official visit to this mine was on March 23rd, 1904. I went through the mine and found it in fairly good condition with the exception of a bad roof in several places. The ventilation was good and the mine was all damp through natural moisture. I instructed the mine foreman to put more timber in the places with bad roofs.

My second official visit was on May 31st, 1904. On this visit I found the management had been changed. Mr. W. L. Hansen had resigned as superintendent and Andrew Adamson of American Fork, had taken his place. I went through all the mine and found the condition a little better than on my last visit. The suggestions that I made in regard to putting up more timber under the bad roof was complied with. The mine was in general good condition.

My third official visit was on August 12th, 1904. I went through the mine and found the ventilation good. The mine was all damp. The condition of the timbering was not as good as on my last visit, as the superintendent had told the miners that they were using too much timber. I called the attention of the mine foreman and superintendent to the matter of timbering as it would not do to neglect to put up props in the rooms because the roof looked good at the time, as the room is driven up, in time the road back of them will become dangerous.

It is double cost to timber it under these conditions. The work is a great deal more dangerous to timber after the rooms have been standing from one to six months, so



I gave them instructions to timber the rooms as they were driven in.

My fourth official visit was on Oct. 21st, 1904. When I arrived at the mine I found that the management had again been changed. Adamson had resigned as superintendent and Mr. John E. Pettit had taken his place. I think that this was a good change made. I went through the mine and found it in fairly good condition under the new management. All the coal was taken out of pillars. The management was taking all the precautions possible in timbering the pillars to keep the men safe.

### WASATCH MINE.

This mine is owned and operated by the Weber Coal company of Salt Lake City and is situated about three miles east of Coalville on the Echo and Park City branch of the Union Pacific. The mine is worked by a long slope and ventilated with a fan. During the year 1904 this mine produced 31,146 short tons of coal, working 238 full days, employing 46 men and 11 horses, four steam boilers and one large steam hoist. There was but two non-fatal accidents.

My first official visit was on March 21st, 1904. I went through the mine and found it in a fairly good condition. All the places were well timbered, and fairly good ventilation. The mine was not as damp as I would like to see it, but part was watered and part of it was made damp by the natural moisture of the mine. I examined the scales that weigh the miners' coal and found them to be correct.

My second official visit was on May 29, 1904. I went through the mine and found it in general, in a good condition, with exception of being a little dusty in places, as on my previous visit.

My third official visit was on Aug. 14th, 1904. I went through all the mine and found it in general, in a fairly good condition. I examined the scales and found them to be correct.

My fourth visit was on Oct 19th, 1904. On this visit I went through all places in the mine and found them to

be in good condition, well timbered, good ventilation, and fairly well watered but not as good as I would like to see it.

### THOMAS AND TUTTLE MINE.

This mine is owned by the Sterling Coal and Coke company of Salt Lake City, and operated under lease by Henry S. Thomas of Wales, Utah.

The Mine is situated about two and one-half miles east of the town of Sterling at the terminus of the Sanpete Valley railroad.

The output of this mine during the year ending Dec. 31, 1904, was 5,633 short tons at a cost of \$1.93; total selling value of product, \$10,907. There were 16 men employed and two horses.

I visited the mine five times during the year and found it in a good safe condition, all places well timbered and kept damp. The mine is ventilated by natural ventilation.

Summary of wages paid: Mine foreman, \$3 per day; miner per ton (2,240 pounds to the ton with one-fourth off for slack), \$1; miners working by the day, \$3.50; timbermen per day, \$2.50; drivers per day, \$2.50; outside laborers per day, \$1.50.

### ABERDEEN MINE.

The Aberdeen Mine is owned and operated by the Whittemore & Ballinger company of Price, Utah, and is situated about eight miles northeast of Price.

This mine has one of the finest veins of coal in the west, the vein being twenty feet thick, clean of all foreign matter, and is of good quality for steam and domestic purposes. It is one of the largest coal fields of the west, within eight miles of the Rio Grande Western railroad. During the year 1904 this mine produced 500 short tons, employed two men and four horses, average days worked 101, consuming 200 pounds of powder. This coal is hauled to the town of Price on the Rio Grande Western railroad and sold at \$3 per ton for domestic use. No accidents during the year.

### HUNTINGTON MINE.

This mine is owned by the P. V. Coal company and operated under the lease by John Bell, and is situated at the head of Huntington canyon 13 miles east of Fairview. on a branch of the Rio Grande Western railroad.

It produced during the year, 750 short tons of coal. working 150 days, employing 6 men and consuming 200 pounds of powder. This mine had three non-fatal accidents during the year. The company is making a great number of improvements on the property in the line of tunnels, etc.

### DESERET MINE.

This mine is owned by the Kemmerer Coal company of Kemmerer, Wyoming, and is operated under a lease by Thomas Reese, of Wales, Utah.

The mine is located in the head of Huntington canyon. The production of the mine during the year was 1,150 short tons, working 300 days, employing 4 men and consuming 350 pounds of powder.

The coal from this mine is hauled by wagon into Sanpete valley and sold for domestic use. The Kemmerer Coal company are making a great many improvements in the way of driving several feet of new tunnel and putting up new buildings.

### CEDAR CREEK MINE.

This mine is owned and operated by the Cedar Creek Coal company and is situated on Cedar creek, 10 miles east of the town of Huntington. Sells its coal in Castle valley for domestic use. The output during the year 1904 was 850 short tons of coal, average price at the mine \$1.00. consuming 375 pounds of powder, working 70 days, employing 5 men. No accidents of any kind.

## HUNTINGTON CREEK COAL MINE.

Owned by the Huntington Creek Coal company and operated by Don C. Robbins. This property is situated some ten miles north of the town of Huntington, on Huntington creek. There are a large number of openings on this property, showing the vein on both sides of the canyon for a number of miles.

The following is a test of the above coal made by C. W. Saxman, president of the Saxman Coal and Coke company of Latrobe, Pa. After a thorough and exhaustive test, one of the leading coke manufacturers in the United States has pronounced certain Utah coal superior to the best Pennsylvania product for coking purposes. He has declared it far ahead of any other known coke for iron manufacturing purposes. The only remaining consideration for capitalists is the securing of cheap transportation rates to the market.

The tests were made by C. W. Saxman, president of the Saxman Coal and Coke company of Latrobe, Pa. The coal came from property belonging to Don C. Robbins in Bear canyon, Emery county. Mr. Saxman himself is a practical coke man. When P. L. Kimberly and F. H. Buhl were figuring on putting up a steel plant in Utah, before they made a deal with the United States Steel company, they sent a car of coal from Mr. Robbins' Emery county mines to Mr. Saxman to be tested as to its coking qualities. The results were remarkably favorable. Following a business with the steel trust Messrs Kimberly and Buhl gave up their option on the Robbins coal lands.

Mr. Saxman was greatly impressed with the result of the tests made at his works. He did nothing about the matter for a long time, but a short while ago he decided to make a personal investigation to determine whether such an unusually good coking coal actually existed in quantities in Utah. He made the investigation and he thus tersely expresses his opinion of the Utah product he obtained:

"It is away ahead of any Pennsylvania coke." The certified statement of the analysis received from the chemists at Pittsburg, is accompanied by this comment: "An

unusually fine analysis." Mr. Saxman is a practical coke man—an expert in fact. He made the trip from Latrobe to Utah and went to the mines. With his own hands he mined the coal from a big twelve-foot vein in Bear canyon which has the same analysis as other coal on Mr. Robbins' claims. He put the coal into barrels and sealed the barrels. Then he personally saw the barrels delivered to the railroad company for shipment to his works at Latrobe.

Mr. Saxman sent the shipment to one of his best ovens. He desired to make the comparison between the Utah and Pennsylvania products as fair and accurate as possible. Consequently he nearly filled the ovens with the best Pennsylvania coking coal coming from the Connelsville district. Right in the center of this with the Connelsville product packed around it on all sides he had placed the barrels of Utah coal with the seal unbroken. The same heat was consequently applied to both coals, all the other conditions being exactly identical. The result was that a thin layer of charcoal separated the two cokes, which were easily distinguishable. Analysis and other tests were made of both. The analysis of the Connelsville coal was as follows:

	Per Cent
Moisture .....	.76
Volatile combustible matter .....	29.56
Fixed carbon .....	63.73
Ash .....	5.95
Sulphur .....	.058

The coke analysis was as follows:

	Per Cent
Moisture .....	Trace
Volatile combustible matter .....	1.34
Fixed carbon .....	86.44
Ash .....	12.22
Sulphur .....	1.07
Phosphorus .....	.6

The following was the analysis of the Robbins coal from Utah:

	Per Cent.
Volatile combustible matter .....	.47
Fixed carbon .....	49.72

Ash .....	3.28
Sulphur .....	.6
Phosphorous .....	Trace

Here is the coke analysis:

Volatile combustible matter .....	3.12
Fixed carbon .....	90.5
Ash .....	6.38
Sulphur .....	.51
Phosphorus .....	Trace

It will be observed that the Utah product is higher in fixed carbon and much lower in ash, sulphur and phosphorus. The practical absence of phosphorus is a highly important feature. The Connellsville coke runs from .05 to 1 per cent in phosphorus. The phosphorus in the coke all runs in to the iron in a blast furnace.

Phosphorus is an undesirable quality in pig iron. Bessemer pig cannot be made of ore containing over .05 per cent phosphorus, using Connellsville coke. With the Utah coke, ore containing a much higher percentage of phosphorus can be made into Bessemer pig, rendering the Utah iron deposits of immensely greater value.

Mr. Saxman took the two cokes to the United States Steel company laboratory at Pittsburg where coke tests are made. There he submitted the two products to every test. The Utah coke was far ahead of the Pennsylvania, bearing up under every strain better in both directions.

#### CASTLE VALLEY SMALL MINES.

These mines are owned by several different parties from the small towns up and down the valley. Some of these mines are constantly working and supplying the small towns in the valley with coal.

#### FERRIN CREEK COAL COMPANY.

This company's property is some twelve miles up Ferron creek from the town of Ferron. They have several openings with a five foot and eight foot vein of coal.

### MILLER & GILSON COAL COMPANY.

This company has several thousand acres of coal land from ten to twenty miles north and northeast of Price, on the R. G. W. R. R. They have a large number of openings on this property showing veins of coal from four to twenty feet of good coal.

This property is in charge of Sam Gilson of Salt Lake City.

### GILSON ASPHALTUM MINE.

The Gilson Asphaltum company of St. Louis, is the owner and operator of this mine which is situated about three miles southeast of Fort Duchesne.

The mine has been closed down during the year 1904.

I made a visit to the Gilson Asphaltum company's mine at Fort Duchesne which is known as the Old St. Louis mine. I found the mine had been closed down and all the electric lights had been taken out and also the ladders had been taken out so that no entrance to the mine can be obtained. There were 25 men employed at this mine which are all layed off. All the machinery and tools are being taken over into White river to be used at the new mines that this company is opening up there. The reason they have for doing this is that they will have a railroad connected with the Rio Grande Western at the mine by the first of August which will make a great reduction in the transportation, and also an increase in the product.

This company, during the year 1904, have built a railroad from Mack on the R. G. W. R. R. in Colorado, some fifty miles over the range to the place called Dragon, on White river, in the southwest corner of Uintah county, where they have located a large number of claims on what is known as the Cowboy vein, which is from five to fifteen feet thick and produces so far, a number two grade of Gilsonite.

There are several mines opened on this property. The company will start to ship along the first part of 1905. They are employing about 200 men at present.

The above railroad is a narrow guage about four miles of which is in Utah. From Mack to Atchee the grade is 2.8 per cent, from Atchee to Baxter pass 5 1-2 per cent for the first mile and 7 1-2 per cent for the next four miles, then it takes a down grade 5 per cent to McAndrews and 2.8 per cent to Dragon.

A new coach built for the line, two standard engines and two shays for the heavy grades have been placed in operation. It is laid with good steel and is well tied and balasted.

It is the intention of the company to make this a standard guage later on. There are several other companies opening up mines at the end of the railroad.

## MINERAL RESOURCES OF UINTAH REGION.

All kinds of natural resources have been pretty effectually kept from the close scrutiny of the prospector and investor, although numerous extravagant traditions of immense mineral wealth have been current for a generation. The very fact of inaccessibility has no doubt kept some of these stories alive much beyond their time.

The mineral resources of the mountainous district are at best very limited. There are few veins. Mineralization is meager. The streams are almost barren of concentrates of any kind. Occasionally a fault-zone is charged with pyrites. Some shale beds also carry iron sulphides plentifully. Weathered surfaces sometimes exhibit an iron capping that might look more encouraging than the facts usually support. Altogether one seldom sees a large mountain range present so sparing evidence of the presence of the metals.

In the cretaceous beds along the flanks of the mountains and sometimes even covered by the latter sediments of the Duchesne basin, there are several seams of coal. There are several seams in one acre and at least one of them is over six feet thick. In the field this has the look of a fairly good quality. I know of no tests yet made upon it. These coal seams may prove of considerable value in certain parts of the district. They may even extend beneath to the south. Coal is now mined on the southern



margin beyond the boundaries of the reservation at similar horizons.

The rich mineral resource of the reservation as is now known, is in hydro-carbon. Some of the rare hydro-carbon varieties, such as ozokerite, elaterite, gilsonite and wurtzilite occur here. Tar springs are also known and would seem to favor the idea that there are still great reservoirs of the mother substance covered up under the formation. All of the known occurrences are in fissures in these latter beds. Occasionally a bed is so saturated with bitumen as to be called an asphaltum lime. All these substances are coming into demand as their use becomes more clearly known. This district is particularly well supplied with some of these minerals. That they have all come originally from deep sea reservoirs of mineral oils, is the opinion of most geologists. But whether these reservoirs still exist and can be exploited no one knows.

#### PARIETTE MINE.

This mine is owned and operated by the American Asphaltum and Rubber company of Chicago, and is situated about thirty miles south of Fort Duchesne.

This property is worked by a well equipped shaft and is of number one class. There was a great deal larger tonnage in 1904 than 1903. It is very hard to get the exact number of tons produced in this mine or any of the other Gilsonite mines. This company employed twenty-five men, and a large number to haul the Gilsonite to the railroad, a distance of 70 miles.

I am pleased to state that there were no accidents of any kind. I inspected these mines three times during the year 1904, and found them all in a good safe condition.

#### SUMMIT PLACER MINING COMPANY.

This company has changed hands and is now called the American Ozokerite Mining company and is situated about one mile east of Soldier Summit on the Rio Grande, employing about 20 men during the year 1904.

My first visit of inspection to this property was in February. On this visit I went through the mine and found it in good and safe condition.

My next official visit was in June. I went through the mine and examined all the machinery and found it all O. K.

On my fourth visit I found that the mine had been closed down about the middle of November.

### RAVEN MINE

This mine is owned and operated by the Raven Elaterite company under a lease from the Government, Mr. Farren acting as superintendent.

The history of that lease dates back a number of years, and was first obtained about the time the St. Louis Asphaltum company got the sanction from the Uintah Indians to cut off a strip of land from their reservation, upon which hydro-carbon was first discovered by Sam Gilson.

J. T. McConnel, then employed by the Government at the White-Rocks Agency, knowing of the deposits, of what he then thought was also asphaltum, obtained a lease from the Indians for 15 miles square, situated east of Strawberry and south of Duchesne Rivers, the principal deposit occurring in Indian Canyon.

The deposits, upon investigation proving to be a superior kind of hydro-carbon mineral, the uses of which were not known, he transferred his interest to the American Asphaltum Co. They in turn also made a failure of treating the material so as to give it a commercial value, and assigned their interest for valuable consideration to the present company, which had the Old J. T. McConnel lease reinstated and same approved by the Secretary of the Interior.

Now this lease calls strictly for hydro-carbon minerals, and all minerals are excluded therefrom, and it is confined to the original 15 miles square, as obtained by Mr. J. T. McConnel.

The law of May 27th, 1903, for the Uintah Reservation plainly states that the Raven Company, in lieu of

their lease can locate 100 claims of this Elaterite and mineral, within the confines of their original lease. They took their 100 claims but on account of some of them pinching out they apparently are endeavoring, not alone to overstep the bounds of their original lease, but also to include precious metals in a strictly hydro-carbon lease or grant.

### THE OZOKERITE MINES NEAR COLTON.

There are several mines starting up in this district. The largest one is the Braffet, C. W. Maxwell and C. W. Shores.

The vein has been opened to a depth of 90 feet and "We are now going down," says Caffey. It is a true fissure in line, and one of the truest and strongest imaginable. It does not crop to the surface, having first been found in digging a well. Enough work has been done from the shaft to practically determine its course into other grounds, which is now covered by a patented claim for a distance of 208 rods. Extensions have been located for a sufficient distance to cover the cream of the proposition. The vein is from eight to ten feet thick, and eighteen inches on one wall is clean wax. The remainder of the vein filling is a decomposed line and percentage of wax it carries is best understood by tests made upon it. The other day 150 pounds of the rock was put into a boiling tank of water and collected by skimming, about 50 pounds of the wax. The material also carries a lighter oily substance, which we understand is also valuable, but its character has not yet been determined by analysis. The property will be opened up some day and the world will know what it really is.

Caffey owns a sixth of the property, Braffet and Shores a third each, and Maxwell a sixth. It may be later on incorporated. A gentleman from New York made an examination of the claims last week and is to report to his clients on a sale.

There are several other companies doing assessment work in this district.

## STATE MINE INSPECTOR VISIT TO THE HYDRO-CARBON MINES.

For the purpose of holding an examination for mine foreman for the hydro-carbon mines, there was only one applicant, J. T. Charlesworth, who passed successfully for a foreman of the Pariette Mine; the above meeting was held on April 12th.

I made a visit to the Gilson Asphaltum Company Mine at Fort Duchesne, which is known as the Old St. Louis Mine. I found the mine had been closed down and all the electric lights had been taken out and also the ladders had been taken so that no entrance to the mine can be obtained. There were 25 men employed at this mine, which are all now layed off. All the machinery and tools are being taken over into White river to be used at the new mines that this company is opening up there. The reason they give for doing this, that they will have a railroad connected with the Rio Grande Western at the mine by the first of August, which will make a great reduction in the transportation, also an increase in the product.

I also made a visit to the Pariette Mine, which is some 30 miles south of Fort Duchesne. This mine is working three shifts full time, with 25 men employed and a large number of teams; there have been big improvements made at this mine, consisting of one double cylinder 50 H. P. hoist, one 40 H. P. Ingersoll Sergeant air compressor, one complete electric light plant, one 70 H. P. Erie Economic Return Tubular boiler, and one large roomy house for the miners; one large dining-room, one sanitary bunk-house, one three-roomed cottage for the mine foreman, one new office building, and one ice-house, which is filled with 50 tons of ice. The company within two weeks will increase the force to 50 men and the output to 40 tons per day of good Gilsonite. The vein has widened to five feet, which makes a very bright future for this company, as they have now blocked out some 10,000 tons of Gilsonite ready to be taken out of the mine. The above improvements have cost the company several thousand dol-

lars. The Pariette Mine is owned and operated by the American Asphaltum Rubber Co., of Chicago, Ill.

GOMER THOMAS,  
State Coal Inspector.

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Salt Lake City, Utah, April 18, 1904.

American Asphaltum & Rubber Company,  
Chicago, Ill.

Gentlemen:

In accordance with Sec. 11 of the Coal and Hydro-Carbon Mining Laws of Utah, I herewith hand you my official report of inspection of your mine at Pariette, on April 14, and 15th.

On the above date I went through the mine and found it in a good condition, as to timbering, and all places were damp and well ventilated, with a good vein of Gilsonite 3 feet thick at the bottom of the shaft, which makes it look very encouraging for the future. The shaft is now down 350 feet.

I am very pleased to inform you that all the suggestions I made to your Mine Foreman, and also to you on my last visit to the mine, have been carried out. The following are the improvements made: The shaft has been timbered with square sets from top to bottom, showing a first-class workmanship, with a number of gallows on top, one double cylinder 50 H. P. hoist, one 40 H. P. Ingersoll Sergeant Air Compressor, one complete electric light plant, one 70 H. P. Erie Economic Return Tubular boiler, one large roomy wash-house for miners' exclusive use, which makes it very comfortable for the miners. There has also been built a three room cottage for the mine foreman. I find that the camp has had a thorough cleaning of all garbage and is in a general good condition. I must congratulate your agent, A. J. Hill, for the good work that he has done. He has made a good mine of the Pariette Mine. All the improvements have been done under his supervision. I must not forget your master mechanic and electrician, who have made a very neat job of putting up the engine and the electric light plant, as everything is working

smooth, especially the indicator, which is of great value to the engineer, and also to the safety of the men in the shaft.

Yours respectfully,  
GOMER THOMAS,  
State Coal Mine Inspector.

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Salt Lake City, July 2, 1904.

Mr. T. P. Rigney,  
Supt. Summit Placer Mining Co.,  
Soldiers Summit, Utah.

Dear Sir:

In accordance with Sec. 11 of the Coal and Hydro-Carbon Mining Laws of the State of Utah, I herewith hand you my official report of inspection of your mine at Soldiers Summit, on June 27 and 28. In reply to your telephone message which I received at 12 m. on the 27th, informing me of the accident which caused the death of Wm. D. Jones, I took the first train to Soldiers Summit and arrived at the mine about 1 o'clock p. m. I found the body of Wm. D. Jones lying in the shaft-house. He had been taken out of the shaft-house at 12 o'clock the night before.

I then inquired into the cause of accident. There was only one man in the shaft with Jones at the time of the accident, the other man had gone up for powder to fire a round of shots. The bucket was sent down to fetch up the tools. As the bucket was going down the engineer, through some cause, overlooked the mark on the rope, and the bucket and cross which is coupled onto, slipped off the guides, the cross-head striking Jones over the left eye and cheek, which caused his death. Jones must have been looking up at the time. The above is the evidence I got from Mr. Warner, who was in the shaft with Mr. Jones at the time of the accident. I then saw the engineer, Mr. Pipe. The following is what he told me: "When I brought the man up for powder he told me to let the bucket down for tools. I started the bucket down; while doing

this I turned sideways to the cylinder to open the pet cocks, with my foot still on the brake, but not pressing hard. Doing this I overlooked the mark on the rope, which is made with hemp and white lead drove into the ropes. I then went out to the boiler-house and told the fireman that if there was anyone hurt that it was all my fault. I then examined the engine drum and brake. I found them in good condition. I found that the bucket was always let down with the brake, with the drum thrown out of gear, so that the engine was never used in letting the bucket down." I examined several other witnesses and they testified about the same as above. After going over the ground I found that everything was in a fairly good condition. In my opinion the above accident was caused through the neglect of the engineer who was in charge on this shift. While he was letting down the bucket with his foot on the brake he turned around to do some other work on the engine and neglected to watch the mark on the rope.

Respectfully yours,

GOMER THOMAS,  
State Coal Mine Inspector.

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#### FATAL ACCIDENTS FOR 1904.

Wm. Crosby, a trapper, was killed in the Sunnyside Mine No. 2. Crosby fell in front of a trip, being crushed about the abdomen.

#### COPY OF CORONER'S VERDICT.

An inquest having been held at Sunnyside, in Sunnyside Precinct, Carbon County, State of Utah, on this second day of January, 1904, before William Hill, Justice of the Peace, in Sunnyside Precinct, in said County, upon the Body of William Crosby, there lying dead, by the Jurors whose names are hereunto subscribed.

The said Jurors upon their oath do say, that William Crosby came to his death according to the evidence

through accident, and though no fault of any party or parties, being away from his line of duty at the head of the trip.

In testimony whereof the said Jurors have hereunto set their names this day and year aforesaid.

(SIGNED.)

G. H. RICHARDS, Foreman.

WILLIAM H. KIERSTEAD,

E. J. DAVIS,

Jurors.

WILLIAM HILL,  
Justice of the Peace.

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Willard Hitchcock, a driver, was killed in the Sunnyside Mine No. 2 by being run over by a loaded hoist trip, and killed instantly.

#### COPY OF CORONER'S VERDICT.

An inquest having been held at Cottage 509, in Sunnyside Precinct, Carbon County, on the 9th day of March, before William Hill, Justice of the Peace, in Sunnyside Precinct, in said County, upon the body of Willard Hitchcock, there lying dead, by Jurors whose names are hereto subscribed, the said Jurors upon their oaths do say, that his death was caused by a loaded car running over him. No blame is attached to any person or persons. The verdict rendered is accidental death. In testimony whereof the said Jurors have hereunto set their hands, this day and year aforesaid.

(SIGNED.)

WM. H. KIERSTEAD,

WM. MURPHY,

B. M. GOOLD,

Jurors.

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Albert C. Wahlin, a miner, was killed in Winter Quarters Mine No. 1, on March 12, 1904. Death caused by compound fracture of frontal bone just over left eye, slight bruises over face.



## COPY OF CORONER'S VERDICT.

We believe that the deceased came to his death between eight and nine o'clock on the morning of the 12th day of March, 1904, in the first room off the tenth raise in No. 1 Mine Winter Quarters, that his death was caused by a blow on the head caused by a piece of shale or clod, which fell from the roof, that the death was purely accidental. In testimony whereof the said Jurors have hereunto set their hands the day and year aforesaid.

(SIGNED.)

JAMES ADAMS,  
JAMES NIELSON,  
L. W. STROM,

Jurors.

John Pajala, a miner, was killed in the Clear Creek Mine, on June 17, 1904. Pajala was killed by a fall of rock, scalp wound and skull fractured at base.

## COPY OF CORONER'S VERDICT.

An inquest having been held at Clear Creek, in Clear Creek Precinct, Carbon County, on the 11th day of June, 1904, before W. R. Bent, Justice of the Peace in Clear Creek, in said County, upon the body of John Pajala, there lying dead, by the Jurors whose names are hereto subscribed. The said Jurors upon their oaths do say:

According to the evidence given, we, the undersigned, do swear that if props had been placed under the loose rock, the accident would not have happened, and do hereby place the blame of accident on the deceased, John Pajala.

In testimony whereof the said Jurors have hereunto set their names the day and year aforesaid.

(SIGNED.)

DAVID GOODMAN,  
JOHN CUNNINGHAM,  
JAMES SHEPHARD,

Jurors.

W. R. BENT,  
Justice of the Peace.

Thomas McKee, a timberman, was killed in the Castle Gate Mine, on June 25th, 1904. Spine fracture causing death six hours after the accident.

### COPY OF CORONER'S VERDICT.

An inquest having been held at the School in Castle Gate Precinct, Carbon County, on the 25th day of June, 1904, before Thomas L. Reese, Justice of the Peace in Castle Gate Precinct, in said County, upon the body of Thomas McKee, there lying dead, by the Jurors whose names are hereto subscribed, and the said Jurors upon their oath do say that Thomas McKee came to his death by a fall of rock while working at his daily occupation as timberman in Castle Gate Mine on June 25th, 1904, through failure on his part to take the necessary precautions to secure a piece of roof he knew to be unsafe.

In testimony whereof the said Jurors have hereunto set their hands the day and year aforesaid.

(SIGNED.)

W. K. INGLE,

JOSEPH HURST,

THOS. J. LAMPH,

Jurors.

THOMAS REESE,

Justice of the Peace.

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Wm. D. Jones, a miner, was killed in the Summit Placer Mining Co. Mine, at Soldier's Summit, on June 26th, 1904.

### COPY OF CORONER'S VERDICT.

That the deceased was working in the bottom of the shaft of the Summit Placer Mine. That the engineer in lowering the bucket failed to watch for his mark on the cable, and by reason of such failure permitted the cross-head to descend below the guides with considerable velocity. That the said cross-head struck the deceased on the head, crushing in the left side of his face and inflicting a wound from which he died instantly. We further find

that the aforesaid failure on the part of the engineer to note the mark on the cable was not with any felonious intent. In testimony whereof the said Jurors heretofore have set their hands the day and year aforesaid.

(SIGNED.)

GEORGE WILSON,  
FREED SINGLETON,  
JOHN W. BROOK,  
Jurors.

T. W. Hutchinson, a miner, was killed in Winter Quarters Mine No. 1 on September 6th, 1904. Back bone broken, causing death.

#### COPY OF CORONER'S VERDICT.

An inquest having been held at Winter Quarters, in Winter Quarters Precinct, Carbon County, on the seventh day of September, 1904, before W. W. Mackintosh, Justice of the Peace, in and for Winter Quarters Precinct, in said County, upon the bodies of Thomas Hutchinson and Arthur Bishop, there lying dead, by the Jurors whose names are hereto subscribed, the said Jurors upon their oaths do say:

That the said Arthur Bishop and Thomas Hutchinson, came to their deaths by negligence, in not protecting themselves, and being in a part of the mine they should not be at the time. In testimony whereof the said Jurors have hereunto set their names the day and year aforesaid.

(SIGNED.)

HORACE PARRY,  
J. P. CURTIN,  
JAMES ADAMS,  
Jurors.

Arthur Bishop, a miner, was killed in the Winter Quarters Mine No. 1 on September 6th, 1904. Bishop's back was broken causing death. Bishop at the time was working with Thomas Hutchinson both being killed.

See above inquest.

John Smith, a miner, was killed in the Castle Gate Mine, on September 23rd, 1904. His back was broken, causing instant death.

#### COPY OF CORONER'S VERDICT.

An inquest having been held at the School House, in Castle Gate Precinct, Carbon County, on the 23rd day of September, 1904, before Thomas Reese, Justice of the Peace, upon the body of John Smith, there lying dead, by the jurors upon their oaths do say, that the said John Smith came to his death by not taking the necessary precautions, having been warned of the danger by his partner, George Danson, and Inspector Wm. J. Howard. We find that he came to his death by a fall of rock, through neglect, and attach no blame to any one. In testimony whereof the said Jurors have hereunto set their hands the day and year aforesaid.

(SIGNED.)

T. T. LAMPH,  
ED. KIMBER,  
CHAS. JENSON,  
Jurors.

#### NON-FATAL ACCIDENTS FOR 1904.

Peter Bother, a miner, was injured in Winter Quarters Mine No. 1, on March 28th, 1904. Bother and his partner were engaged taking out a pillar between rooms 4 and 5. At the time of the accident Bother was shoveling coal from near the cave, into the mine car, when a piece of rock fell from the edge of the cave and caught his leg between rack and mine car, causing left leg to be broken in two places.

Joseph Marshall, a motorman, in Sunnyside Mine No. 2, was injured on March 28th, 1904, by motor striking a tie and driving the same against prop, knocking it out and letting lagging fall, striking Marshall, dislocating his collar bone and breaking two of his ribs.

Victor Bain, a miner, was injured in Winter Quarters Mine No. 1 on April 19th, 1904. The roof at the place of the accident is composed of shale and sandstone, and is very hard in the cross-cut; but along the side of the room 19, coal had fallen, leaving a shattered edge. After cutting into room 19, Bain and partner went into the place and pulled down part of the shattered clod, after which they fired a shot and before the smoke cleared off, they returned to see what result the shot had, at which time a piece of clod fell, striking Bain, causing a compound fracture in the left leg just above ankle, cut over left eye, bruises on back and chest.

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E. C. Massey, a miner, was injured in the Castle Gate Mine No. 1 on April 25th, 1904. Massey had one rib fractured and spinal column injured, causing paralysis of lower part of the body and legs.

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Hyrum Praingle, a miner, was injured in the Grass Creek Mine, on August 18, 1904. A small piece of rock about six inches thick falling or breaking away from a prop where he was standing, loading a car, causing bruise on head and left arm, small bone above ankle broken.

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David J. Reese, a miner, was injured in the Winter Quarters Mine, No. 1, on October 4th, 1904. Reese and his partner had fixed a shot in their working place, and upon going back after the shot went off, to find out what the shot had done, some of the clod near the working place fell from the roof, striking Reese, breaking his left arm and ankle sprained.

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Eric Pillie, a miner, was injured in the Clear Creek Mine, on October 4th, 1904. Some coal fell from the roof, striking him, causing a fracture in his left leg, half-way between the knee and thigh, back bruised and scratched, right arm bruised and cut on head.

ANNUAL  
REPORT

OF THE

# Coal Mine Inspector

FOR THE

STATE OF UTAH

For the Years 1905 and 1906.

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SALT LAKE CITY  
THE DESERET NEWS  
1907.



REPORT

OF THE

Coal Mine Inspector

FOR THE

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For the Years 1905 and 1906.

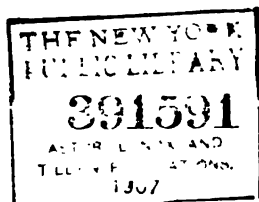
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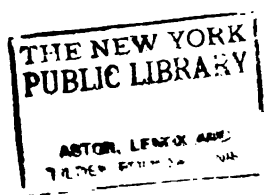
SALT LAKE CITY  
THE DESERET NEWS

1907.  
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# Compliments 01







Gomer Thomas, State Coal Mine Inspector of Utah.

*To His Excellency, John C. Cutler,  
Governor of State of Utah.*

DEAR SIR:—I have the honor to submit herewith  
my report as State Coal Mine Inspector for the year  
ending November 30th, 1905.

Respectfully yours,

GOMER THOMAS,  
State Coal Mine Inspector.



REPORT OF  
State Coal Mine Inspector  
FOR 1905.

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The year 1905 was the most prosperous, for all interested in mining coal, of any year since mining commenced in Utah, and it would have been far more prosperous had the Railroad efficient equipment to handle the coal, and the Mine Officials having a scarcity of miners, could not comply with the great demand for coal.

During the year just ended, relation between the employer and employee have been most cordial, governed by natural confidence and showing the most friendly feeling and sympathy. There have been no labor troubles or dissensions, and the Mine Owners, have liberally shared with the workmen the profits from their mines, paying them satisfactory wages, and afford them nearly steady employment to the utmost of their ability, special care has been taken by the mine owners and local management to protect the workmen from injury to body or danger of death. They endeavor to comply with all State Laws on this subject, and do not hesitate, to incur any additional expense to secure additional safety, to that required to fulfill the legal requirements.

The number of accidents resulting fatally, or in serious injuries, while low in comparison with other States, is no doubt much higher than it would be if the workmen were of a more careful class, and take up the opportunities offered them, and were able to co-operate with their employers in their efforts to provide for their safety, it must be born in mind that of the large number employed in coal mining in Carbon County.

nearly one half are foreigners, unable to speak our language, and men who have not been trained to exercise care, even for their own protection. But they require the constant care of those placed over them to protect their health and lives.

During the year there were seven accidents resulting fatal and thirty six causing severe injury. I made thorough personal investigation into the circumstances surrounding these occurrences, and the causes leading up to the same.

I have submitted detailed to the Governor's office which are on file there, and to which I refer, it will appear from these reports that in most every instance the unfortunate occurrence was caused by the persistent neglect of the miner to make use of the facilities providing for his own safety placed on hand by his employer.

We know this is largely due to the fact that the men are of the above named class and are hard to convince that any precautions are necessary on their part.

In addition to this, I have made a great number of inspections during the year in excess to them as required by law, to familiarize myself with the schemes, plans and development of the different mines, and with the systems of drainage, ventilation, lighting employed, and I am satisfied, that local conditions considered, the mines are fully up to the standard required. It has been my intention to have them excel rather than fall short of those requirements and in this work I have received at all times the hearty co-operation of all concerned.

I have by careful examination, satisfied myself of the practical knowledge of the mine foremen, and their fitness for their position and have met with the support of the mine owners and management in my efforts to see that only those best qualified with the longest practical knowledge, and good judgment, hold positions which place under their care, the lives and health of the workmen. The system of promoting efficient, practical miners to those positions, is proving its worth, and nothing has ever occurred in my judgment that would justify its abandonment and the substitution of the theoretical training for practical knowledge.

The production of Coal in 1905 was 1,602,528 short tons, at a value of \$1,890,983.04, average per ton \$1.18 on cars at mine, showing an increase of 39,254 short tons over 1904, the amount of coke produced was 215,712 short tons with an increase of 30,695 short tons.

There has been a large amount of Gilsonite, Ozokerite, Elaterite and Asphaltum mined in the State during 1905. As to the amount I am unable to state as I could not obtain the proper data.

The number of employees in and around the coal mines was 1,963 a decrease of 252, the number of men employed in and about the Hydro-Carbon mines was 386. The average amount of Coal mined for each man employed in the coal mines was 816 short tons. The number of fatalities to every 1000 men employed is 3.35. Amount of coal mined for each life lost 228,932 short tons. The amount of high explosive used in the coal mines of the State was, black powder 150,642 pounds, dynamite 83,692 pounds. Or one pound to every 6½ short tons of coal.

#### FATAL ACCIDENTS.

It will be seen by noting the causes of accidents, here reported, that a large percentage, might have been avoided by the exercising of ordinary care on the part of those who have been killed, however, there does not appear to be any method or argument that can be advanced which will induce the miner and the workman to take proper precaution to secure their own safety. Causes of accidents are follows:

Fall of roof or coal.....	3
Falling down shaft.....	1
Run over by car on Railroad.....	1
Run over by car in Mine.....	1
Run over by Railroad Locomotive.....	1

---

Total.....7

Four were killed in the coal mines.

I would suggest to the Honorable Legislature of the State of Utah, which meets in January, 1907, that they make an amendment to the Coal and Hydro-Carbon



Mining Laws of the State of Utah, as follows: That it shall be unlawful for any miner or any employee in the Coal and Hydro-Carbon Mines of the State to use or set off any high explosive for the mining of coal or taking down rock during the working hours, as all shots must be fired after the men are all out of the mine excepting those that will be needed to fire the same.

My reasons for the above suggestion is, that the men employed in the mines are allowed to use explosives which causes the air in the mine to become vitiated by the unnecessary use of powder for blasting off the coal. As in some of our large mines they are shooting and using powder throughout the day.

Other reasons are, that the great source of danger comes from the use of powder such as blow out shots, etc. As nearly all of our explosions come through this source, especially where a mine is dry and dusty. Hoping the honorable body will take this matter up as it is one of the most needed amendments to-day.

William Sidwell, a stableman, age 55, was killed at Winter Quarters Mine, January 5th, 1905. Directly in front of power house on railroad track. Right leg crushed through between knee and ankle, injuries from which he died at St. Marks Hospital, Salt Lake City.

At the time of the accident Sidwell had been to the company stable and was returning home, walking on main side track, when near the power house he was knocked down and his leg run over by locomotive engine 704 which had been taking coal at the chute and was backing down when accident occurred.

#### FATAL ACCIDENTS.

Elijah Turner, a Miner, age 45, was killed in the Grass Creek Mine, February 6th, 1905, Right thigh bone broken slight scratch on head, body slightly bruised.

At the time of accident Mr. Turner was loading a car at the face of his room, when part of a loose slab of coal fell over him, bending his head to the floor and breaking his thigh bone, from which he died in three or four days.

Thomas Blundell, age 28, a miner, was killed in the Colton Wax Mine on April 18th, 1905. Blundell was let down to the 45 foot level in the bucket with the hoist and after landing on the 45 foot level gave a signal showing that he had safely landed. A few minutes afterwards his body was discovered by other workmen in the bottom of the shaft at the 100 foot level. Nothing is known as to the cause of the accident and we can only conjecture that he was attempting to cross the shaft to go into the north drift for the purpose of obtaining specimens and failed to close the trap door but attempted to cross the shaft on the bucket which was then swinging at the 45 foot level. In falling Blundells neck was broken.

James Benedetta, a miner, age 36, was killed in the Sunnyside Mine number 1 on April 25th, 1905. A piece of rock averaging from two to three inches in thickness and nearly five feet long, about three feet wide fell from roof of his working place striking him on the back, forcing him down against the pick handle with which he was working, Ribs broken and pushed into his lungs causing death a few hours afterwards.

James Smith, a driver, age 18, was killed in the Winter Quarters Mine on August 11th, 1905. Smith was making his last trip for the day and was riding on the shaft in front of three cars when the car next to horse became derailed, jamming Smith between mine prop and end of mine car. Causing injuries from which he died three hours after accident occurred.

Jos. M. Soyc, a miner, age 24, was killed in the Sunnyside Mine number 2 on September 9th, 1905. At the time of accident Soyc and his partner Frank Sajz, were working at the face of their room, Sajz had gone back from the face to get a sharp pick, when coal fell from the roof from a smooth slip. Causing injuries from which he died a few hours afterwards.

Sam Pascoe, a car dropper, was killed at Sunnyside Mine, on November 20th, 1905. Pascoe at the time of accident was dropping a railroad car which was partly loaded and while doing so the back chain broke and Pascoe fell in front of Car. The whels passing

over his legs cutting them off and mangling his body, causing his death.

#### SERIOUS ACCIDENTS FOR 1905.

Joseph Barber, a miner, aged 52, was injured in the Grass Creek Mine on January 14. At the time of the accident Mr. Barber and his partner James Richards, were busy loading a car, when a piece of coal 3 ft. long and 15 inches thick fell from the roof striking Mr. Barber, injuring him as follows: Scalp wound on head, shoulder bruised and right ankle broken at ankle joint.

Orson Moved, a driver, age 22 was injured at the Clear Creek mine on May 5, 1905. At the time of the accident Moved was driving along entry towards room 18 when car jumped the track and throwing the driver against the prop from which the following injuries resulted: Four ribs broken on left side and bruised on left arm and shoulder.

George Busenbark, a miner, age 32, was injured in the Winter Quarters Mine on May 6, 1905. Busenbark was engaged in helping to place a loaded mine car upon the track when a piece of clod which his partner had attempted to take down but thought it would stay until the car was loaded, fell from roof striking car and rolling down struck Busenbark causing the following injuries; Bruised on upper part of back, hips and right foot and partial paralysis of legs.

Antonio Sacaminoni, a miner, age 37, was injured in the Clear Creek Mine on May 11, 1905. At the time of the accident he was tamping a shot in his room when a piece of coal fell from the roof striking him on the head knocking him down and breaking his leg.

John A. Newrea a waterman age 57, was injured in the Winter Quarters Mine on June 14, 1905. At the time of accident Newrea was going along the entry when he was knocked down by a horse and trip of cars fracturing his right collar bone, two ribs on right side, and one rib on left side fractured. little finger on left hand broken, left hand badly cut and bruised.

TABLE SHOWING THE COAL PRODUCTION IN THE STATE  
OF UTAH FROM 1876 TO 1905, INCLUSIVE.

YEAR	NO. TONS PRODUCED	GAIN	LOSS
1876.....	50,400	.. ..	.. ..
1877... ..	50,400	.. ..	.. ..
1878... ..	67,200	16,800	.. ..
1879... ..	225,000	157,800	.. ..
1880... ..	225,800	.. ..	.. ..
1881... ..	250,000	25,000	.. ..
1882... ..	250,000	.. ..	.. ..
1883... ..	250,000	.. ..	.. ..
1884... ..	250,000	.. ..	.. ..
1885... ..	213,120	.. ..	36,880
1886... ..	200,000	.. ..	13,120
1887... ..	180,020	.. ..	19,980
1888... ..	259,501	79,500	.. ..
1889... ..	236,651	.. ..	22,850
1890... ..	318,159	81,508	.. ..
1891... ..	371,045	52,886	.. ..
1892... ..	361,314	.. ..	9,731
1893... ..	418,049	56,735	.. ..
1894... ..	447,276	59,227	.. ..
1895... ..	172,958	.. ..	274,328
1896... ..	503,243	330,285	.. ..
1897... ..	582,092	78,849	.. ..
1898... ..	673,297	91,205	.. ..
1899... ..	878,122	204,826	.. ..
1900... ..	1,233,978	456,856	.. ..
1901... ..	1,382,470	148,492	.. ..
1902... ..	1,641,436	258,966	.. ..
1903... ..	1,782,178	120,742	.. ..
1904... ..	1,563,274	.. ..	198,904
1905... ..	1,602,528	39,350	.. ..

PRODUCTION OF COAL, COKE AND ASPHALTUM.  
IMPORTED, EXPORTED AND CONSUMPTION OF SAME IN  
UTAH FOR 1905.

Production,.....	Bituminous, 1,602,528	Coke, 215,712	Gilsonite, .....
Imported, .....	" 365,677	" .....	" .....
Total, .....	" 1,968,205	" .....	" .....
Exported, .....	" 337,613	" 56,725	" .....
Consumed in Salt Lake, 1905,.....	Bituminous, 218,495		
" " " 1904,.....	" 214,369		

TOTAL PRODUCTION OF COAL IN UTAH DURING THE  
YEAR 1905, BY COUNTIES.

Carbon. ....	1,444,565
Summit .....	74,911
Sanpete .....	4,202
Emery ....	3,500
Other Small Mines .....	75,350
<b>Total .....</b>	<b>1,602,528</b>

COAL PRODUCED IN THE SEVERAL MINES IN UTAH  
FOR 1905.

NAME OF MINE	OPERATED BY	NO. OF SHORT TONS
Winter Quarters.....	P. V. Coal Company.....	256,550
Clear Creek.....	P. V. Coal Company.....	304,025
Castle Gate.....	P. V. Coal Company.....	243,556
Sunnyside.....	Utah Fuel Company.....	639,934
Grass Creek.....	Grass Creek Coal Company..	40,561
Wasatch.....	Weber Coal Company.....	34,350
Other Small Mines.....	.....	83,532
<b>Total.....</b>	<b>.....</b>	<b>1,602,528</b>

TABLE SHOWING NUMBER OF TONS PRODUCED, NUMBER OF DAYS WORKED, NUMBER OF PERSONS KILLED AND INJURED, AND NUMBER OF EMPLOYED, NUMBER OF PERSONS KILLED AND INJURED, AND NUMBER OF POUNDS OF POWDER USED, ETC.

NAME OF MINE	Counties	Short Tons of Coal	Tons of Coke	Days Worked	Men Employed	Fatal Accidents	Non-Fatal Accidents	Pounds of Powder	Pounds of Dynamite	Horses and Mules	Steam Boilers	Locomotives	Coke Ovens
Winter Quarters.....	Carbon	354,550		277	386	1	3	58,242			37	9	
Castle Gate.....	Carbon	243,546	83,348	282	401	1	13		40,367		40	7	204
Clear Creek.....	Carbon	304,025		250	265		2	64,325			35	8	
Sunnyside.....	Carbon	639,934	132,364	271	648	3	15		43,325		43	15	550
Aberdeen.....	Carbon	500		76	2								
Grass Creek.....	Summit	40,561		235	52	1	1	15,350			10	3	
Wasatch.....	Summit	84,350		266	42		2	2,950			9	4	
Huntington.....	Emery	2,000		76	6			1,600			4		
Cedar Creek.....	Emery	1,500		76	12			1,200			2		
Thomas.....	Sanpete	4,212		270	12			700			2		
Other Small Mines.....		76,350		210	125	1		5,300			15		
Total.....		1,602,528	215,712	2,376	1,963	7	36	150,642	83,692		167	50	754

TABLE SHOWING TONNAGE BY COUNTIES FOR 1905 COMPARED WITH 1904.

Counties.	Tons for 1905	Tons for 1904	Gain	Loss
Carbon .....	1,444,565	1,408,372	36,193	
Summit.....	74,911	68,719	6,192	
Sanpete.....	4,202	6,033		1,831
Emery.....	3,500	2,750	750	
Other Small Mines.....	75,350	77,400		2,050
Totals .....	1,602,528	1,563,274	43,135	3,881
Gain, Short Tons.....			39,254	

# PRODUCTION OF COAL IN GREAT BRITAIN 1913-1914

Total Production in Great Britain	Total Production in Great Britain	Total Production in Great Britain
1913	1914	1915
21,000,000 tons	21,000,000 tons	21,000,000 tons



TABLE SHOWING TONNAGE BY COUNTRIES FOR 1900 COMPARABLE WITH 1901

Countries	Tons for 1900	Tons for 1901	Tons for 1900	Tons for 1901
Carbon .....	1,444,000	1,405,372	30,000	30,000
Bamboo .....	74,000	66,400	0	0
Sample .....	1,200	0,000	0	0
Emery .....	3,000	3,000	0	0
Other Small Stones .....	0,000	0,000	0	0
<b>Total</b> .....	<b>1,520,200</b>	<b>1,474,772</b>	<b>30,000</b>	<b>30,000</b>
<b>Total, Sheet Tons</b> .....	<b>40,300</b>	<b>40,300</b>	<b>0</b>	<b>0</b>

TABLE SHOWING PRODUCTION OF COAL IN UTAH DURING YEAR 1905.

Counties.	Total Pro- duction in Short Tons.	Total Pro- duction of Coke.	Average Per Ton.	Days Worked.	Em- ployees.
Carbon.....	1,444,565	215,712	\$1.18	1,935	1,722
Summit .....	74,911		1.17	511	94
Sanpete. ....	4,202		1.45	270	12
Emery.....	3,500		1.00	150	10
Other Small Mines. ....	75,350		1.00	210	125
Totals .....	1,602,528	215,712	\$1.16	2,376	1,963

TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES IN 1805 COMPARED WITH 1904.

Counties.	1904	1905	Gain	Loss
Carbon .....	1,967	1,722		245
Summit .....	100	94		6
Sandpete .....	20	12		8
Emery .....	15	10		5
Other Small Mines .....	90	125	35	
Totals .....	2,215	1,963	35	264

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN THE STATE AND THE NUMBER  
OF EACH THAT WERE IN OPERATION DURING 1905.

COUNTIES.	Number of Mines More than 6 Men.	Number of Mines Less than 6 Men.	Total by Counties.	Number of Large Mines in Oper- tion in 1905.	Number of Small Mines in Oper- ation in 1905.	Total Number of Mines in Oper- ation in 1905.
Carbon .....	8	50	58	8	50	58
Summit .....	2	3	5	2	3	5
Sanpete .....	1	5	6	1	5	6
Uintah .....	.....	25	25	.....	25	25
Emery .....	.....	42	42	.....	42	42
Iron .....	.....	15	15	.....	15	15
Total .....	.....	.....	.....	.....	.....	151

TABLE SHOWING NUMBER OF FATAL, SERIOUS AND NON-SERIOUS ACCIDENTS AND THE COUNTY IN WHICH THE SAME OCCURRED DURING 1905.

COUNTIES	Fatal	Serious	Non-Serious	Total
Carbon .....	5	10	23	38
Summit .....	1	1	2	4
Emery .....				
Sanpete .....				
Wasatch .....	1			1

TABLE SHOWING CASUALTIES OF 1905 COMPARED WITH 1904.

COUNTIES	1904			1905				
	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	Gain	Loss
Carbon .....	8	56	64	5	33	38		26
Summit .....	1	2	3	1	3	4	1	
Sanpete .....								
Wasatch .....	1		1	1		1		

TABLE SHOWING THE NUMBER OF MINES EMPLOYING  
THE DIFFERENT METHODS OF VENTILATING AND  
THE KIND OF OPENING.

COUNTIES	Character of Opening			Mode of Ventilation		
	Drift	Slope	Total	Fan	Furnace	Natural
Carbon.....	56	2	58	9	1	49
Summit.....	8	2	10	2	.....	8
Emery.....	34	.....	34	.....	.....	34
Sanpete....	4	2	6	.....	.....	6
Uintah.....	25	.....	25	.....	.....	25
Iron.....	15	.....	15	.....	.....	15

TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES IN OPERATION AND THE NUMBER OF  
DAYS WORKED IN 1904 AND 1905.

COUNTIES	Number of Mines in		Number of Mines in Operation in 1905.	Gain.		Loss.	Average Number Days Worked in 1904.		Average Number Days Worked in 1905.		Gain.		Loss.	
	1904.	1905.												
Carbon .....	58	58	58	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Summit.....	5	5	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sanpete.....	6	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uintah.....	34	25	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Emery.....	42	42	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron.....	10	15	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
							276		249		6		9	
							.....		.....		.....		.....	27

TABLE SHOWING PRODUCTION OF COAL, NUMBER OF  
POUNDS OF POWDER USED, NUMBER OF FATAL AND  
NON-FATAL ACCIDENTS, NUMBER OF DAYS  
WORKED AND NATIONALITIES OF MEN EM-  
PLOYED BY THE UTAH FUEL AND P.  
V. COAL COMPANIES.

Coal produced .....	1,444,065
Coke.....	215,712
Average days worked.....	249
Men employed . . . . .	1,720
Fatal. . . . .	5
Non-Fatal.....	33
Pounds of Powder....	206,259

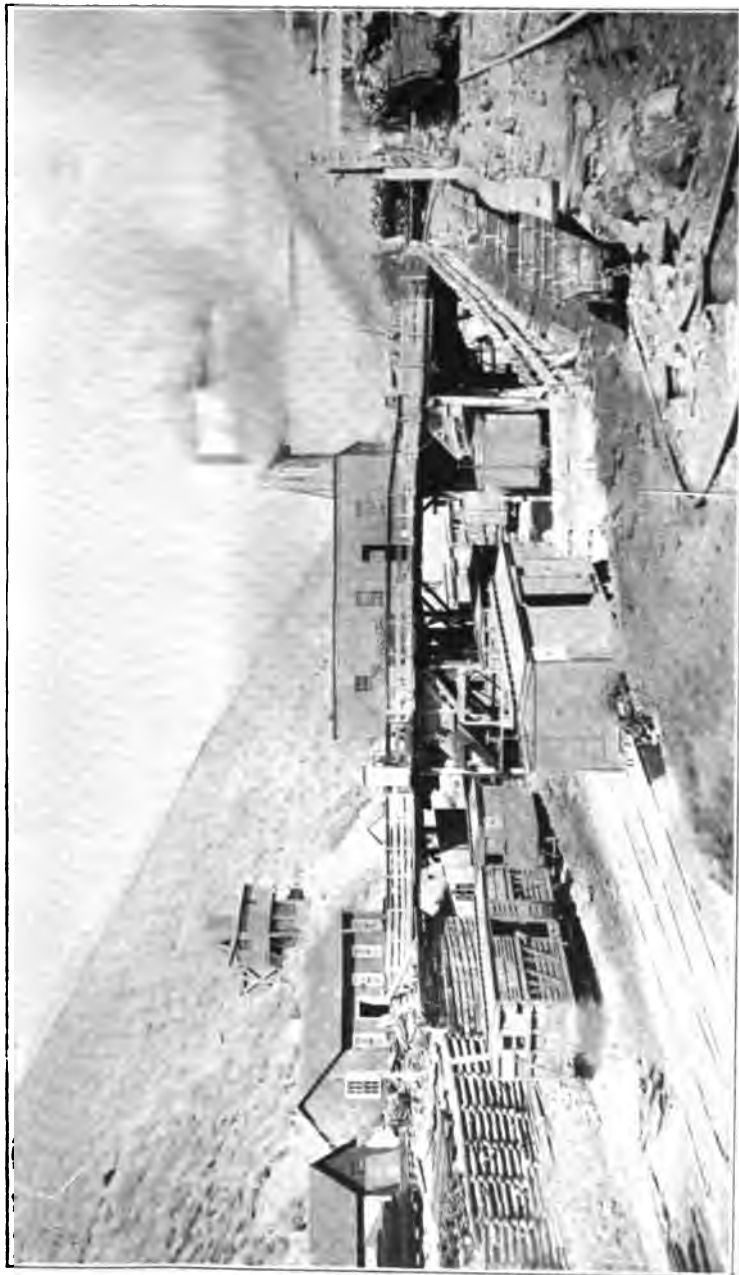
NATIONALITIES.

Americans. ....	879
German.....	54
Finn .....	157
Italian .....	171
Austrians .....	260
Swede ....	7
French .....	16
Greek. ....	111
Slavs .....	3
Negroes....	14
Spanish .....	
Mexicans .....	2
Japanese.....	46
Chinese....	



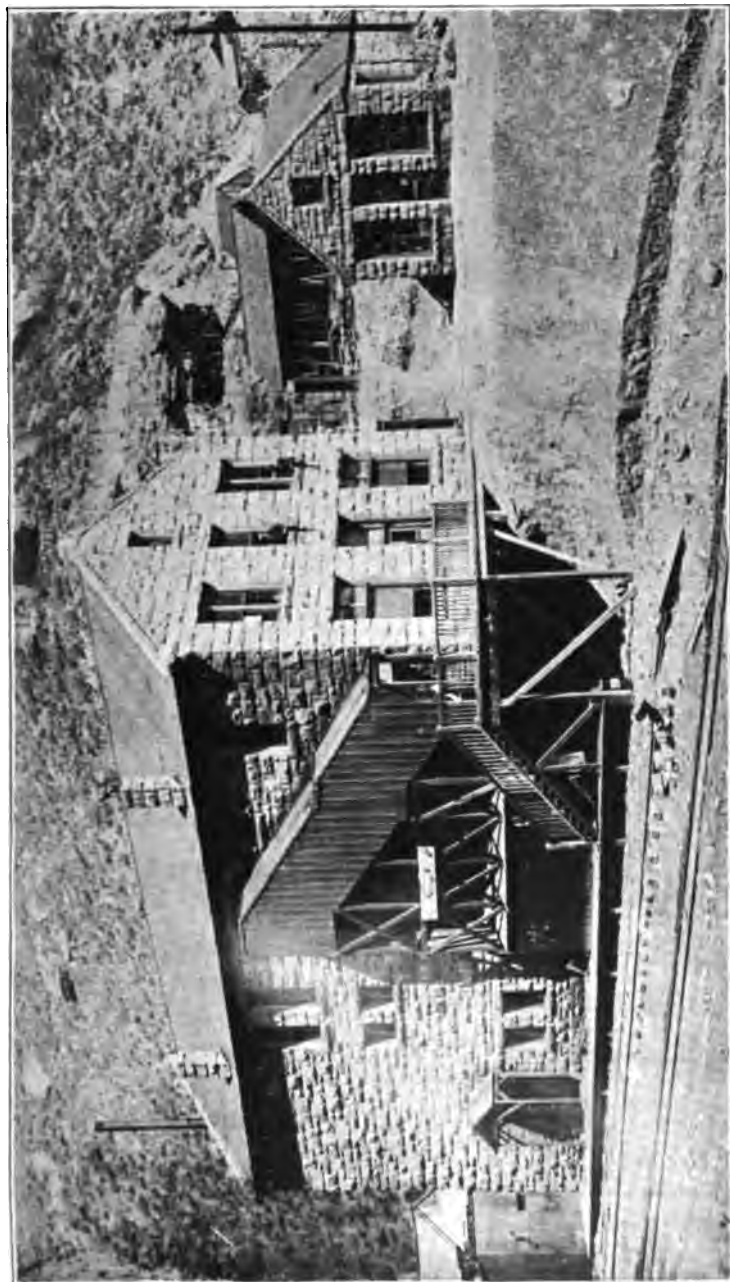
TABLE SHOWING LOCATION, ETC., OF MINES IN UTAH.

NAME OF MINE	NAME OF OPERATOR	COUNTY	NAME OF SUPT.	P. O. ADDRESS.
Winter Quarters.....	P. V. Coal Co.....	Carbon.....	T. J. Parmley.....	Scofield.....
Clear Creek.....	P. V. Coal Co.....	Carbon.....	Wm. Forrester.....	Clear Creek.....
Castle Gate.....	P. V. Coal Co.....	Carbon.....	W. J. Elwood.....	Castle Gate.....
Sunnyside.....	Utah Fuel Co.....	Carbon.....	Robert Howard.....	Sunnyside.....
Aberdeen.....	Whittemore & Ballinger.....	Carbon.....	A. Ballinger.....	Price.....
Grass Creek.....	Grass Creek Coal Co.....	Summit.....	John E. Pettit.....	Coalville.....
Wasatch.....	Weber Coal Co.....	Summit.....	T. J. Lewis.....	Coalville.....
Huntington.....	P. V. Coal Co.....	Emery.....	Wm. Forrester.....	Clear Creek.....
Deseret.....	Kemmerer Coal Co.....	Emery.....	Thos. D. Reese.....	Wales.....
Cedar Creek.....	Cedar Creek Coal Co.....	Emery.....	Wm. Howard.....	Huntington.....
Thomas.....	Sterling Coal Co.....	Sanpate.....	H. Thomas.....	Manti.....
Huntington Creek.....	Don C. Robins Coal Co.....	Emery.....	D. C. Robbins.....	Salt Lake City.....
Anthracite Coal Co.....	Anthracite Coal Co.....	Iron.....	Robert Kirker.....	Salt Lake City.....

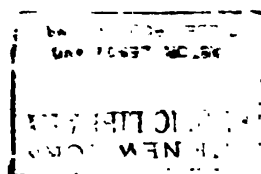


Bridge at Winter Quarters.

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Winter Quarters Store and Office.



## WINTER QUARTERS MINE.

Located at Winter Quarters, the Colton and Scofield branch of the Rio Grande Western. The mine is worked by a drift and is ventilated by artificial ventilation, power used for haulage is electricity, the haulage on the main haulage road is done by an electric locomotive, all main entries are lighted by electric light.

The seam of coal which is worked in this mine has a thickness of 9 to 12 feet. The roof is not of the best kind, as there is a clod of 6 to 10 inches next to the coal, which is hard to keep up. The coal is mined with picks.

Oils used in this mine meets with the requirements of the law. Rules are posted at the mine. The output for this mine for the year was 256,550 short tons, consuming 58,242 pounds of black powder and employing 386 men.

Thomas J. Pamsley, mine superintendent. Henry Pamsley, mine foreman.

My first official visit of inspection to this mine was on January 17 and 18, 1905. I found the mine in a fairly good condition, well timbered, watered and ventilated.

My next official visit to this mine was on March 24 and 15. I went through the mine with the mine superintendent, and am pleased to say that I found the mine in a far better condition than it has been for a long time.

My next official visit of inspection to this mine was in the fore part of the quarter ending June 20. I went through the mine and found it in a fairly good condition, with good ventilation, all places well timbered and kept damp.

My next official visit to this mine was on August 11, 1905. I went through part of the mine and found it in fairly good condition.

On August 12th I went in the mine and visited the place of accident where James Smith got hurt the day before, from which cause he died a few hours later. As I looked over the place of accident I found the cars had jumped the track, and James Smith, who was a driver, was riding on the front end of the front car on the shaft, when the car jumped the track, He was

found between the prop and the car. I looked over the track and measured the gauge and found it to be all right. The grade at that point was nearly two per cent. I measured the distance from the rail to the timber on the side that Mr. Smith got hurt, it was 2 feet 3 inches, on the other side it was 2 feet 10 inches between the track and the timber. The height at this point was 6 feet from the rail to the bottom of the cap piece. In my opinion, by carefully looking over the condition for 100 feet outside the place of accident, I find that the car on the last empty trip going in was off the track, and it may have been possible that it had thrown coal or dirt on the track, and when Smith came with a loaded trip—and as near as I can find out he was coming out a little fast, as it was the last trip for the day, and it is generally the rule to make the last trip in a hurry—this, as near as I can see, was the cause of the accident.

I made other visits to this mine and found it in general in good condition.

#### CLEAR CREEK MINE.

This mine is owned and operated by the P. V. Coal Company, and is situated about six miles south of Scofield, on a branch of the R. G. W. R. R.

The output of this mine for the year 1905 was 304,025 short tons of coal, at a cost of \$1.18 per ton. Total value of product \$ , consuming 64,325 pounds of powder, employing 285 men and 25 mules and horses; mine worked 230 days.

This mine is worked by a drift and has artificial ventilation, being ventilated by a fan which produces 94,384 cubic feet of air per minute at the intake and 98,301 cubic feet at the outlet. All haulage done by means of a tail rope. The pumps are run by compressed air.

My first official visit to this mine was on January 24 and 25, 1905. I found the mine in a fairly good condition, well timbered and damp, with good ventilation.

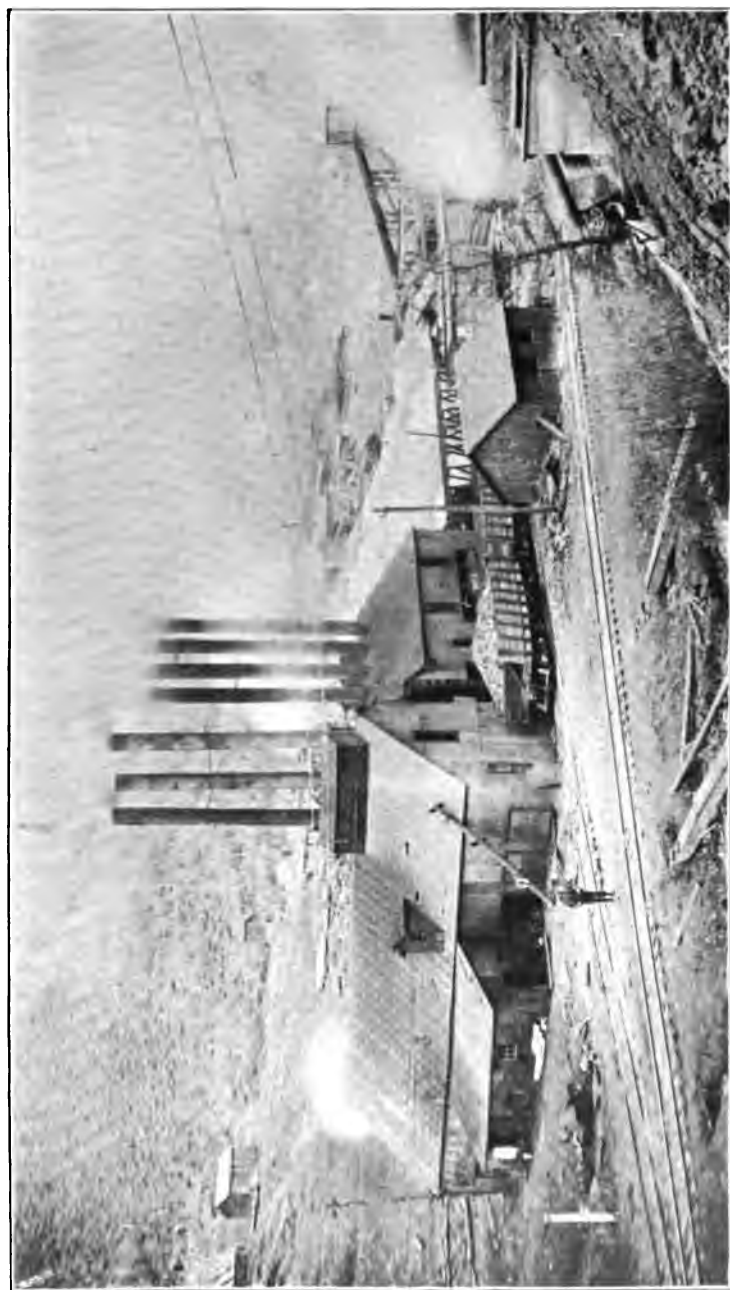
My next official visit was on March 22 and 23. I went through the mine and found it in a better condition than on my last visit, with the exception of infe-




Company House at Winter Quarters.

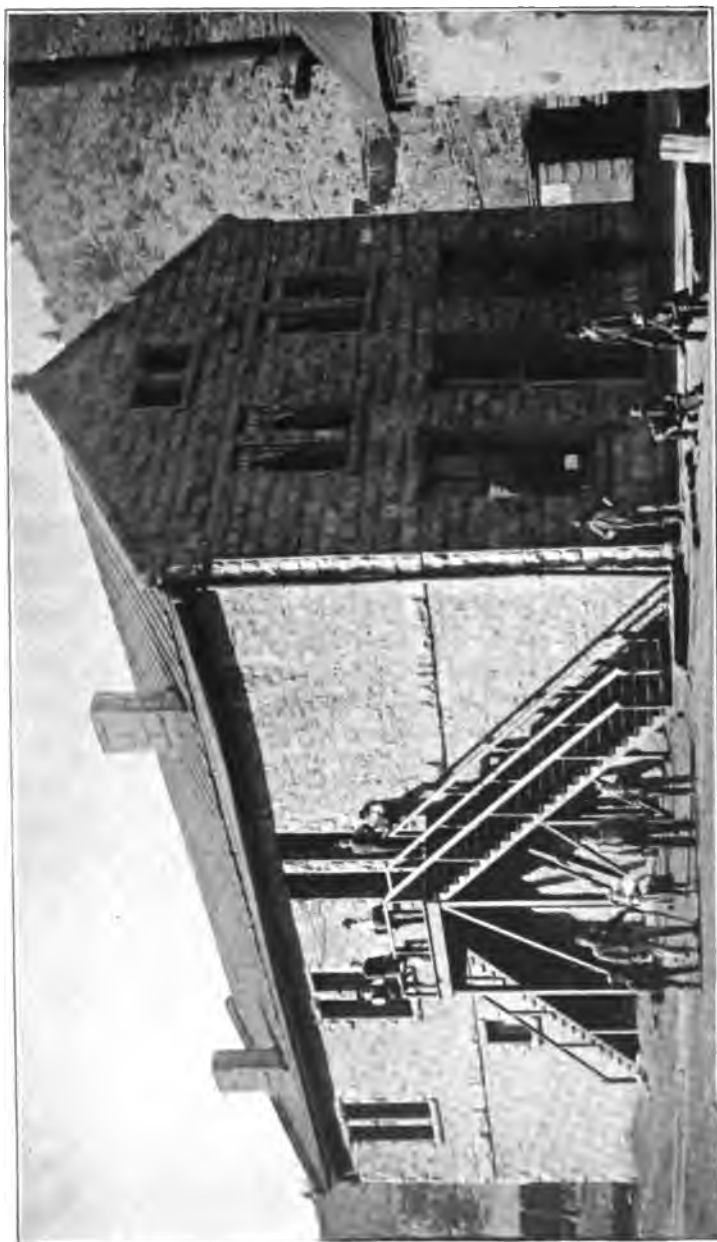


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Power House at Clear Creek.





Store and Office at Castle Gate.

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TILDEN

rock oil, which was used mostly by day men. I notified the mine foreman to see to this at once as the new law is in force.

My next official visit to this mine was on May 3. I went through the mine and found all places in a good, safe condition.

I made other visits to this mine and found it in about the same condition as above.

Wm. Forrester, mine superintendent. James Russell, mine foreman. T. W. Thomas, assistant mine foreman.

#### CASTLE GATE MINE.

The Castle Gate Mine is the property of the P. V. Coal Company and is located 110 miles southeast of Salt Lake City on the main line of the R. G. W. R. R.

The amount of coal produced in 1905 was 243,556 short tons, consuming 40,367 pounds of dynamite; coke made from Sunnyside coal, 83,348 short tons, employed 401 men in and around the mine and 17 mules, working 232 days, one fatal accident, 13 non-fatal.

The mine is worked by a drift and is ventilated by artificial ventilation. All the main haulage ways are lighted by electric light. There are telephone connections on the main entry with the company's office.

My first official visit to this mine was on February 13 and 14. I went through the mine and found everything in a fairly good condition, all places well watered and kept damp, with good ventilation and well-timbered. I consider the mine in a good, safe condition.

My next official visit was on April 24th and 25th. I went through the mine and found it well watered with the exception of a few places which were dry.

The ventilation and timbering were good. I found the return airway close to the fan was in a bad condition on account of the washout in the ravine above, which had caused the ground to move and break in the timber, this part of the return airway has made more or less trouble for several years. My suggestion would be to start a new air course outside of the three doors and come in around the doors and come

through right opposite the fan and drive from there on to the first raise which would do away with all this bad ground. I would leave 60 feet of pillar between the old and new air course, if you have not started at this I would advise you to do so at once. I found on this visit the mine-foreman did not go around the mine more than once a week, and therefore did not know but very little about the condition of the Mine. The mine-foreman should visit each place in the mine at least twice or three times each week. I spoke to the mine foreman in regards to this matter and his answer was that he was ordered to do other work. This is a condition that should not exist in a mine like Castle Gate, as we all know that the mine is so easy to be made dangerous with our dust so explosive and the amount of gas that is given off in the mine.

My opinion is that the mine foreman should not have his hands tied and I must insist that the mine-foreman must attend to his duty, as there is no economy in taking him from his work to do other work. I find this condition in several of our mines.

My third official visit was on July 29th. I went through the mine and found it in a fairly good condition with the exception of the 7 off 13 raise, here I found the ventilation was bad, the atmosphere was thick and badly mixed up and in my opinion not safe to work in, as the blaze on each lamp acted as if it was hung on a rubber band.

The rooms have no crosscuts in and the inside room is on the inside of the cross cut between the main and back entry. The entry was driven so narrow that there is no place for braddice without taking a skip along the entry. I spoke to all the fire bosses and asked them, why it was that their work on ventilation had gone so far behind. Their answer was that they were taken off to do other work, this is a condition similar to the one I spoke of in regards to the mine-foreman, in my last report to the superintendent. I find that the fire-bosses have been working almost day and night at other work in place of keeping the ventilation up. I must say that a fire boss should not be overworked, especially in a mine like Castle Gate, where there is so much work to go through.



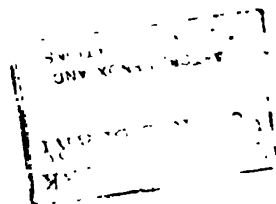
Castle Gate Coke Ovens.



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Company House at Castle Gate.



When you start to hurry your firemen and overrun them with work, there is where you make a mistake. If the fire boss makes a mistake or neglects his duty we are gone, so I must insist that the fireboss tend to their own work, keep up the ventilation, as they are not supposed to lay track, timber, etc., there is plenty of work for them to see to the safety of miners and property.

I wired the Mine Superintendant at 5:45 a. m., July 31, as follows: Take all the men out of 7 off 13 raise except those you need to widen the entry, put up canvas, as the air you have now is so mixed and unsafe.

I still insist that no men shall work there until there is sufficient air to render harmless the noxious gases, except those necessary to make the improvement.

As I went on through the mine, I found all the employees using inferior oil which I will say is nearly one third coal oil.

I will call your attention to section 13 of the Coal Mining Laws of the State of Utah for 1905 which reads as follow:—Only a pure oil, or oils as shall be free from smoke as pure animal oil or pure cotton seed oil, shall be used for illuminating purposes in any coal or hydro carbon mine.

I found all the rooms that were a little ahead of the air were full of the worst kind of smoke and a man could hardly breathe.

On my last two visits I spoke to the bosses also to the men and warned them of the penalties for using such oils, but no one seems to pay any attention. I will therefore give you 15 days to clean out this oil and get oil that is fit to use; if the change will not be made by the end of 15 days, I will proceed according to law. Hoping you will see to this at once to save further trouble.

My next visit was on August 3rd. I went through the mine and found it in a better condition than on my last visit. The ventilation had been improved and the bad oil replaced by good oil.

I made other visits and found the mine in about the same condition as the above visit.

COPY.

CASTLE GATE, UTAH, April 13th, 1905.

*Mr. Gomer Thomas,*  
*State Mine Inspector,*  
*Salt Lake City, Utah.*

DEAR SIR:—Enclosed herewith please find a letter to me from Mr. Howard, our superintendent at Sunnyside regarding a plan which he has presented for reducing our ventilating expenses at Sunnyside.

We have recently made a connection between No. 1 Mine and No. 2 Mine to be used as an escape-way as is shown on the accompanying sketch.

As you doubtless remember our No. 2 Mine is ventilated by a fan run by its own engines and boilers near the entrance to this mine. This requires considerable coal and the constant attendance of two men, and had quite an expense for repairs to the boilers.

What Mr. Howard proposed to do is to draw the air from No. 2 Mine through this escape-way into No. 1 and carry it through the workings on the 1st Right Entry off the slope in No. 1 Mine and along the air course to this entry to No. 1 fan; or in other words to ventilate No. 2 Mine by the No. 1 fan using this escape-way as the return from No. 2 Mine.

I presume we may be infringing upon the law slightly in having more than the stipulated number of men on a single split; but as you are well aware No. 2 Mine never makes any gas, and from actual experience, Mr. Howard having made a test of this matter in the last two or three days, the return air in No. 2 Mine is remarkably pure and there is no question in our minds but that no harmful results can come from our putting into effect this system of ventilation.

Mr. Howard's letter explains the volumn of air we expect to use in No. 2 Mine and in this 1st Right off the slope of No. 1 Mine showing that so far as the ratio between the volumn of air and the men and animals working we are clearly within the law. As you know our No. 1 fan at Sunnyside is a large one and



Sunnyside Crusher Plant and Bridge.



certainly has a capacity to furnish all the air needed for those two mines.

This plan will effect quite a saving in our operation, and it seems to me that as far as the safety and health of our men is concerned there are no objections whatever to it.

Will you kindly give this matter your consideration and let me know if you think it will be all right for us to go ahead and carry out this plan.

Very truly yours,

S. KEDZIE SMITH,  
Gen. Supt.

SALT LAKE CITY, UTAH, May 2nd, 1905.

*Mr. S. Kedzie Smith,  
Gen. Supt. Utah Fuel Company,  
Castle Gate, Utah.*

DEAR SIR:—In answer to yours of April 13th, 1905 in regards to ventilating No. 2 Mine by means of No. 1 fan at Sunnyside. Will say that I don't see my way clear to make such a change.

I must call your attention to section 9 of the Coal Mining Laws which were approved March 17th, 1905, which reads as follows:—Every mine wherein are employed more than seventy five persons, must be divided into two or more districts. Each district shall be provided with a separate split of pure air, and the ventilation shall be so arranged that not more than seventy five persons shall be employed at the same time in any one current or split of air.

By making this change you would have 174 men working in the same split which would be contrary to the Law.

I would suggest that you would take fresh air through No. 2 main entry from Water Canyon, to ventilate the first raise entry and all the raises and return it to No. 1 fan. And ventilate No. 2 independently.

In order to cut down expenses in No. 2 you can take one shift off the fan, run it one hour after the



shots are fired—you can also reduce the speed of the fan and do with one half the steam that you use, as there is far more air going in No. 2 than the law requires. By doing this it will take less water to keep the mine damp as the more air we have the more water we need. By making this change you would save the salary of one man, the use of one of the boilers and from 40 to 45 tons of coal a month, this itself would be quite a saving and we would still be on the safe side of the law.

Hoping the above will meet with satisfaction, I remain.

Very truly yours,

GOMER THOMAS,  
State Coal Mine Inspector.

SALT LAKE CITY, UTAH, July 21st, 1905.

*Mr. W. J. Elwood,*  
*Mine Supt.,*  
*Castle Gate, Utah.*

DEAR SIR:—In answer to yours of July 27th in regards to a temporary certificate to James Larkin. I must say that I know but very little about him and it is our duty to get the very best of men to act as Fire-bosses, and as you are aware that the Castle Gate is a large mine and there is a large field worked out with many a big goffs and in most places they give off more or less gas, so you see we must not employ strangers to do this kind of work. I would much rather keep the old hands if possible.

The rumor that is going around about our old firemen I am afraid has a good bit of a grudge hanging to it, as I inquired in regards to this matter and could not find any thing that would condemn them.

I will call a meeting of the Board in a couple of weeks and we will take up the Fire Boss examination at the same time.

Yours truly

GOMER THOMAS,  
State Coal Mine Inspector.



South End Sunnyside Coke Ovens.

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SALT LAKE CITY, UTAH,  
August 15th, 1905.

*Mr. W. J. Elwood,*  
*Supt. Castle Gate Mine,*  
*Castle Gate, Utah.*

DEAR SIR:—I wish to call your attention to Sec. 13 Coal Mining Laws of Utah for 1905, and also to my telegram of July 31st, where I notified you to stop working in room and entries on 7 off 13, until you had put more fresh air in there.

On my visit to the Castle Gate on August 10th I found that you did not stop the men from working while you were putting up the canvas and taking in air. I demand an explanation as you have violated the laws of the State, by letting the men work contrary to my orders. I will furthermore call your attention to Sec. 18 of the Mining Laws, which reads as follows:—The neglect or refusal to perform the duties required to be performed by any section of this act, or the violation of any of the provisions hereof, shall be deemed a misdemeanor, and any person so neglecting or refusing to perform such duty or violating such provisions, shall, upon conviction, be punished by a fine of not less than one hundred dollars, nor more than five hundred dollars for each and every offense.

Respectfully yours,

GOMER THOMAS,  
State Coal Mine Inspector.

COPY.

CASTLE GATE, UTAH,  
August 17, 1905.

*Mr. Gomer Thomas, State Coal Mine Inspector,*  
*Salt Lake City, Utah:*

DEAR SIR:—Your favor of August 15th to Superintendent Elwood, Castle Gate, was referred to me. Mr. Elwood says that it would have quite seriously interfered with our output to have closed that entry off

entirely and, as they were getting on the entry at that time, about 400 feet of air per man after allowing 300 feet for the single mule working there. He thought it would be sufficient if he took the men out of the one room inside the last cross-cut and proceed to put the brattice in the entry as you instructed, immediately. The morning after receiving your telegram they took the men out of the room inside the cross-cut and began immediately to put up the brattice. This was the only day the mine worked after receiving your telegram and until the brattice was all put up according to your instructions; the next day was an idle day; and before the next working day began, the brattice was all up.

We have no desire, whatever, to disobey any instructions you may give, and are glad to co-operate in making our mines as safe as possible, but there was no time to discuss the matter with you, and Mr. Elwood though there was no explosive gas present, there would be no harm in doing as he did.

I will be very much obliged if hereafter you will take these things up directly with me instead of with the mine superintendents, as we can bring about the desired changes quicker and with much less discussion than if they are taken up with the mine superintendents.

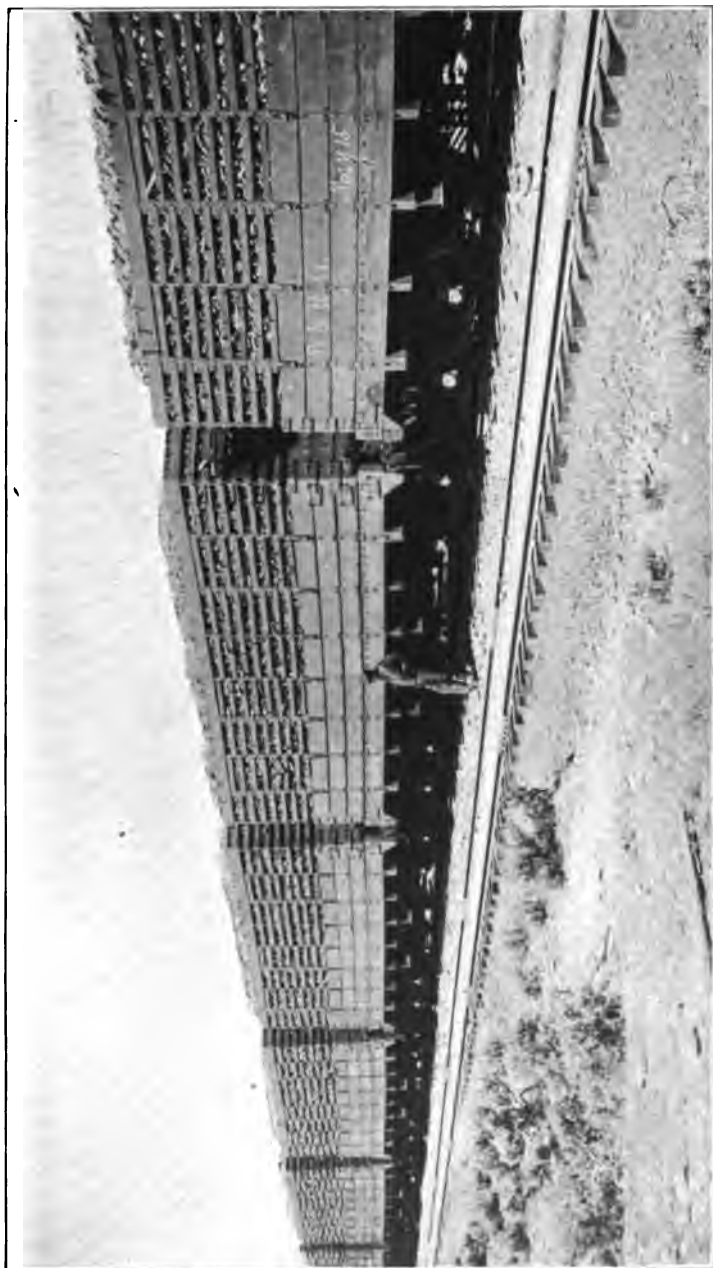
Yours truly,  
S. KEDZIE SMITH,  
General Superintendent.

#### SUNNYSIDE MINES NOS. 1 AND 2.

These mines are owned and operated by the Utah Fuel Company, and are situated seventeen miles east of Mound S, on a branch of the Rio Grande Western.

No. 1 mine is worked by a slope. Haulage is done by steam and horses. The power used in taking the water out is compressed air, artificial ventilation, by fan.

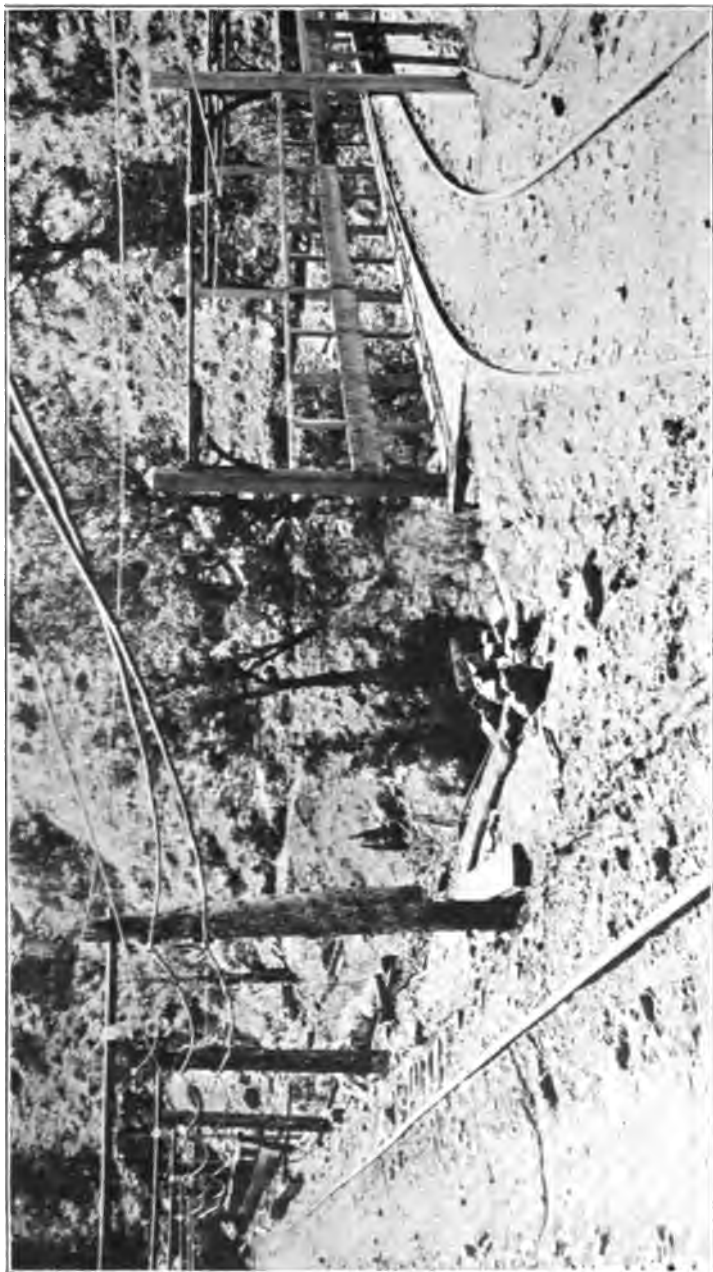
No. 2 mine is a drift. Haulage is done by an electric locomotive and electric hoist. The mine is ventilated by artificial ventilation, by fan.



Coke Cars as they are Loaded.



111



Sunnyside Mines 3 and 5.



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Sunnyside Power House.

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100

The output of Sunnyside mines Nos. 1 and 2 for the year 1905 is as follows: 639,934 short tons; average number of days worked, 271; men employed, 648; average price per ton on cars at mines, \$1.18; coke produced, 132,364 short tons.

My first official visit to these mines was on February 19-20, 1905. I went through No. 1 mine and found everything in a good condition.

I could not go through No. 2 mine as it was idle and the fan shut down.

My next official visit was on May 16 and 17, 1905. I went through No. 1 mine and found it in a fairly good condition with the exception of the first right, here I found the ventilation to be in a very bad condition, with the stoppings leaking throughout the district. The air was so bad that I found some of the men were staggering from one side of the entry to the other, all on account of not having enough air. This is a condition that should not exist in mines that do not do any shooting during working hours. All this came about through the mine foreman not having time to see to it, as it is here like in the rest of the mines, the mine foreman's attentions are called to getting out cheap coal in place of attending to his duties and seeing that the mine is kept safe and healthy.

I am sorry to say that our mine foremen are overworked and their wages are too small, as it is impossible to get work out of men that are not paid the proper wages.

To change the above condition in regards to the air in the first right, I suggested to the mine superintendent and mine foreman to go into No. 2 and bring a part of the air from No. 2 down through the first right. My instructions were followed out and proved to be a success, as the air was greatly improved by noon the next day.

I went through No. 2 and Water Canyon and found the mine in good condition, well timbered and watered with good ventilation.

My next official visit was on August 4 and 5, 1905. I went through No. 1 mine and found all the men working in the Water Canyon vein, working with safety lamps. I found a few small feeders of gas in the en-

tries, but not enough to interfere with the safety of the mine.

The mine superintendent and mine foreman went with me on this trip, and as we went through the mine the superintendent and mine foreman found fault with my last report, on account of me reporting the mine not properly ventilated. I reported the mine just as I found it, as it was not properly ventilated.

Thomas Bell, the mine foreman, during the day disputed my word, also my last report, and he got so angry that I had to insist upon the superintendent not to let him come with me any more, as he was interfering with my work.

I went through other parts of the mine, and found it in a fairly good condition, with the exception of a few places being dry and dusty. The superintendent was with me and he informed me that he would see to it at once. The slope that was dry on my last visit had been watered and kept damp.

I found No. 2 mine in a good condition, well watered, timbered and ventilation good.

I visited the mines on August 29 and 30, 1905, and found the improvements that I had suggested on my previous visit had been complied with, and the mines were in a fairly good condition.

My next visit was on November 23 and 24, 1905. I found the mines in a good condition.

I made another visit and found the mine in good condition.

#### GRASS CREEK MINE.

This mine is owned and operated by the Grass Creek Coal Company, of Salt Lake City, and is situated eight miles north of Coalville, on the Echo and Park City branch of the Union Pacific.

The mine is worked by a drift, and is ventilated by artificial ventilation. The mine produced 40,561 short tons of coal during 1905, consumed 15,350 pounds of black powder, working 255 full days, employing 52 men and 10 horses. There was one fatal and one non-fatal accident. Number of steam boilers, three.



Reserve Coke at Sunnyside.

1000

1000

The following are the officers of the Grass Creek Coal Company:

Joseph F. Smith, president.  
W. W. Cluff, vice-president.  
Arthur Winters, secretary and treasurer.  
John Pettit, mine superintendent.

I made seven visits to this mine during the year 1905, and always found the mine to be in a very good condition.

#### WASATCH MINE.

This mine is owned and operated by the Weber Coal Company of Salt Lake City, and is situated about three miles east of Coalville, on the Echo and Park City branch of the Union Pacific. This mine is worked by a long slope and ventilated with a fan. During the year 1905 this mine produced 34,350 short tons of coal, working 256 full days, employing 42 men and 9 horses, four steam boilers and one large steam hoist. There was but two non-fatal accidents.

I made seven visits to this mine during the year 1905, and always found the mine to be in a very good condition.

#### THOMAS AND TUTTLE MINE.

This mine is owned by the Sterling Coal and Coke Company of Salt Lake City, and operated under a lease by Henry S. Thomas of Wales, Utah.

The mine is situated about two and one-half miles east of the town of Sterling, at the terminus of the Sanpete Valley Railroad.

The output of this mine during the year ending December 31, 1905, was 4,202 short tons, at a cost of \$1.45. There were 12 men employed and two horses.

I visited the mine during the year and found it in a good, safe condition, all places well timbered and kept damp. The mine is ventilated by natural ventilation.

Summary of wages paid: Mine foreman, \$3 per day; miners, per ton (2,240 pounds to the ton with



one-fourth off for slack) \$1; miners working by the day, \$3.50; timber men per day, \$2.50; drivers per day, \$2.50; outside laborers per day, \$1.50.

#### ABERDEEN MINE.

The Aberdeen mine is owned and operated by the Whittemore and Ballinger company of Price, Utah, and is situated about eight miles northeast of Price.

During the year 1905 this mine produced 500 short tons, employed two men and four horses, average days worked 75, consuming 325 pounds of powder. This coal is hauled to the town of Price, on the Rio Grande Western Railroad, and sold at \$3 per ton for domestic use.

#### HUNTINGTON MINES.

These mines are located, one in Deer Creek, which employs four men. The coal mined is sold in the valley to the farmers. One in Bear Canyon, which employs ten men, under the instructions of Mr. D. C. Robins as agent.

There are several other openings in the canyon, all being worked under the same management.

#### CEDAR CREEK MINE.

This mine is located 12 miles south of Huntington, and is operated by the Cedar Creek Coal Company. Mine superintendent, William Howard.

#### IRON COUNTY MINES.

There are two mines located on Coal Creek, some 10 miles east of Cedar City, employing four men during the winter season, selling their coal to Cedar City. The coal is of good quality for steam and domestic purposes.

The Corey Brothers' mine is located some five miles southeast from Cedar City, employing two men during the winter season.

Kanarra mines are located some five miles northeast of Kanarra, about 30 miles north of St. George and 40 miles from Lund, employing five men supplying coal to the valley.

Uintah County has some 34 openings on a five-foot vein, five to eight miles north of Vernal, the coal is of a fair quality for domestic purposes. There are other large coal fields in Uintah County that have not been touched.

#### NEW HARMONY COAL COMPANY'S MINES.

These mines are situated five miles northwest of New Harmony, on the east side of the Granite Mountain, on the line of Iron and Washinton counties, 45 miles south of Lund, a town on the S. P. L. A. & S. L. R. R.

The company has spent \$55,000 on development work, employing five men. The coal is a semi-anthracite, but the veins are small, and mixed with slate.

Robert Addison Kirker, manager and co-owner.

#### OZOKERITE, ASPHALTUM, GILSONITE AND ELERITE.

The following are the companies that are working Gilsonite mines:

American Asphaltum & Rubber Company, Pariette, Utah.

St. Louis Gilsonite & Asphaltum Company, Fort Duchesne and Dragon.

Raven Company, working elerite on Indian Creek and asphaltum, some five miles north of Fort Duchesne.

#### AMERICAN OZOKERITE COMPANY.

Which is located at Soldier's Summit and Colton, Utah.

#### PLEASANT VALLEY OZOKERITE MINING COMPANY.

Which is located at Colton, Utah.

## COLTON WAX MINE.

Which is located at Colton, Utah.

The above mines have done but very little work during the year 1905, on account of no market for the product.

## ASPHALTUM MINES.

Salt Lake City owns one of these mines, which is situated near Thistle Junction, on the Rio Grande Western.

Sunnyside Asphaltum Company, which is situated twelve miles northeast of Sunnyside.

Vernal Asphaltum Company, situated eight miles north of Vernal, Utah.

There are other large deposits of asphaltum in Utah which have not been prospected.

## UTAH HYDRO-CARBON FIELDS.

The hydro-carbon fields of the Uintah basin contain one of the greatest of Utah's resources—pure gilsonite. The supply, to all appearances, is inexhaustible; it is sufficient to supply the whole world for an unlimited number of years.

The gilsonite fields begin at a point about three miles west of the west line of the old Uncompahgre Indian reservation, and extend easterly over what was the reservation for a distance of seventy-five miles, clear across the Colorado boundary. In area they are about seventy-five miles long east and west, and about forty miles wide, north and south.

The gilsonite fields, or at least nearly all the valuable gilsonite claims, are owned by the "asphaltum trust." The St. Louis Gilsonite Company and the Gilson Asphaltum Company, both of which are subsidiary corporations of the "asphaltum trust," are operating in Utah, and one of their main objects, up to date, has been to limit the supply of gilsonite and asphaltum so as not to over-supply the market and thus force down the price.

## USES OF GILSONITE.

Gilsonite is utilized mainly in the manufacture of varnishes, pipe-dip, roofing materials, etc. It can also be utilized in the manufacture of rubber goods. Ordinary rubber goods, it is maintained, can contain about 40 per cent of gilsonite. Much Utah gilsonite has been marketed in Europe.

The Utah gilsonite is pure when mined. It requires no treatment after being taken from the vein before it is used for manufacturing purposes. The aim of those who control the product is therefore to supply only what the market requires and no more. No where else in the world is it found in pure form. It is a soluble bitumin dissolving readily in benzine.

The supply of the adjacent asphaltum is held down by the trust, because in the eastern oil fields asphaltum is manufactured as a by-product and can be purchased much cheaper than the Utah product can be shipped east to the great markets. This supply of eastern asphalt is almost unlimited, too, and until a large market can be created in the west, the trust will naturally limit the local output.

## PERFECT FISSURE VEINS.

The gilsonite in the Uintah basin runs in the most perfect fissure veins known to the mining world. The four large veins are the Little Bonanza, the Cowboy, the Big Bonanza, and the Black Dragon. The St. Louis Gilsonite Company already referred to, is working the Black Dragon vein at Dragon, the present terminus of the Uintah railway.

The gilsonite lies in perpendicular veins between solid walls of rock. At one point where the vein is exposed, in White River cut, it is seen to be 3,000 feet deep. This particular vein averages twelve feet in length, and is so perfectly formed that it is possible to drive a buckboard along the top of it. It is the belief of experts that all the big veins are from 3,000 to 80,000 feet deep. They are perfectly visible to the naked eye.

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they could neither work the claims nor secure patents.

When the reservation was opened Congress specifically closed the asphalt and gilsonite fields to mineral entry. Then the trust purchased from the miners a quit-claim to their right of discovery, and secured the passage of legislation opening to entry every alternate section of the asphalt fields and validating the rights to which they had purchased quit-claims.

The Gilsonite Asphaltum Company is doing an extensive amount of work in their great gilsonite deposits, shipping a large amount daily to St. Louis. At this point the product is variously treated, the first-class grade being converted into fine varnishes, and the remainder into paving material. It is a well known fact that these gilsonite deposits are tremendously large, and more development work is now being done than ever before in the history of that region.

The veins of gilsonite extend for miles across the country, and the company is not bothering with these veins unless they are from 10 to 20 feet wide. Work is being done entirely with pick and shovel, as the explosive qualities of the dust prohibits any attempts at blasting. While it can be said that no more modern manner of mining this deposit is known, the method is considered satisfactory as the walls are as perfect as the walls of a building.

Mr. R. M. Pope & Co. have 100 claims of valuable ground on the reservation. Of these 37 are gilsonite, the remainder being elerite. Mr. Pope expects to be a heavy shipper of hydro-carbon during 1906.



# REPORT FOR 1906.





REPORT OF  
State Coal Mine Inspector  
FOR 1906.

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*To His Excellency, John C. Cutler,  
Governor of State of Utah.*

DEAR SIR:—I have the honor to submit herewith my report as State Coal Mine Inspector for the year ending November 30th, 1906.

Respectfully your,  
GOMER THOMAS,  
State Coal Inspector,

INTRODUCTION.

The year 1906 was a most extraordinary one in the industrial life of the United States, in all branches of trade, there was felt the quickening impulse of prosperity and the great coal producing states of the West were alive with an activity never before equalled as a result, the output that has been growing year by year, the significance of this tremendous tonnage as a means of augmenting the wealth of this country, and as a source of comfort to all classes of people can scarcely be appreciated, persons ordinarily have but little conception of the value of coal, either as a domestic commodity or as a factor in the development and maintenance of our great industrial interest.

Bituminous coal is the great power that lies at the foundation of all our manufacturing interest, it enables the factory, the furnace, the locomotive, and the steam boat to create and transport the vast and constantly growing wealth of the land. It is little wonder then, that the mere suggestion of a coal famine in

one-fourth off for slack) \$1; miners working by the day, \$3.50; timber men per day, \$2.50; drivers per day, \$2.50; outside laborers per day, \$1.50.

#### ABERDEEN MINE.

The Aberdeen mine is owned and operated by the Whittemore and Ballinger company of Price, Utah, and is situated about eight miles northeast of Price.

During the year 1905 this mine produced 500 short tons, employed two men and four horses, average days worked 75, consuming 325 pounds of powder. This coal is hauled to the town of Price, on the Rio Grande Western Railroad, and sold at \$3 per ton for domestic use.

#### HUNTINGTON MINES.

These mines are located, one in Deer Creek, which employs four men. The coal mined is sold in the valley to the farmers. One in Bear Canyon, which employs ten men, under the instructions of Mr. D. C. Robins as agent.

There are several other openings in the canyon, all being worked under the same management.

#### CEDAR CREEK MINE.

This mine is located 12 miles south of Huntington, and is operated by the Cedar Creek Coal Company. Mine superintendent, William Howard.

#### IRON COUNTY MINES.

There are two mines located on Coal Creek, some 10 miles east of Cedar City, employing four men during the winter season, selling their coal to Cedar City. The coal is of good quality for steam and domestic purposes.

The Corey Brothers' mine is located some five miles southeast from Cedar City, employing two men during the winter season.

plosives, which causes the air in the mines to become vitiated by the unnecessary use of powder for blasting of the coal, as in some of our large mines they are shooting and using powder throughout the day.

Other reasons are that the great source of danger comes from the use of powder, such as blow out shots, etc., as nearly all our explosions occur through this source, especially where a mine is dry and dusty. Hoping the honorable body will take this matter up as it is one of the most needed amendments of today.

#### SOURCE OF TROUBLE IN UTAH.

Provisions of the mining law that exempts from inspection the mines employing six men or less. There are scores of such mines in this State, and while the inspector visits them occasionally, he has no authority to take any action regarding their condition, these mines have no fans or furnaces and in other respects they are operated without regard to law. We have no means of ascertaining how many men are killed in them or what amount of coal they produce, but from the occasional visit made to them by the inspector, we have reason to believe that most of them should be closed, as they are unfit for men to work in. All mines should come under the provision of the mining laws, at least so far as ventilation and the safety of the workmen are concerned.

Electric haulage has been introduced in several of the large mines of our State and prove an ideal power for hauling the heavy tonnage of coal through the extensive underground levels and tunnels. Electric motors using a direct current of 500 volts, being employed in this work, this voltage is supposed to be harmless, but results prove otherwise. There is not a word in the mining laws of this State governing the operations of mines that has the least application to the dangers of electric wire, mining machines or hauling motors, in fact the word electricity, or mining machines, are not to be found in the mining laws which no doubt is attributable to the fact that at the time the present mining laws were enacted, electricity in our mines was practically an unknown experiment, now the greater percentage of our coal is produced from its use, and

*[The page contains extremely faint, illegible markings that appear to be bleed-through from the reverse side.]*

thought has been given to the enactment of legislation that would tend to safe guard the Hydro-Carbon Miner in his hazardous work, and at the same time treat with justness the rights and the interest of the operator. The Hydro-Carbon Mining Industry of Utah is so vast that it has over shadowed a great many other kindred industries and the result has been that the Hydro-Carbon Mines have been allowed to develop with complete freedom from legal restraint or guidance. These interests are now great enough to demand attention. They have reached a stage of development where they should be brought within the purview of the law. The operators of these industries should be complete to take all the necessary precautions to protect their employees, and the employees in turn should be brought under such statutory regulations as will insure careful attention to the rules necessary for the protection of life and property. It is the judgment of the inspector that the next legislature should be made familiar with the need of these industries for proper regulation in their development and operation and to that end a bill should be prepared and introduced at the session of 1907.

There should also be something done in regards to giving the inspector power to appoint a deputy to inspect the Hydro-Carbon Mines, at a salary of \$5.00 per day and expenses, and an appropriation made to cover the same, as the mines are so scattered over the southeastern part of the State, over 100 miles from the railroad, as it is impossible for the inspector to cover the ground and do the work as it should be done.

There is no other subject so worthy the attention of the legislature in their duty of framing and placing on the Statute Books proper legislation for the protection of life and property that that which the mining industry of to-day requires if we would place ourselves in the spirit of development and progress which the intelligence and humanity of this 20th century demands.

The production of coal in 1906 was 1,839,219 short tons, showing an increase of 236,691 short tons over the preceding year.

The amount of coke was 282,195 short tons, an increase of 66,483 short tons over the previous year.

There was also produced in the State 11,531 short tons of Gilsonite, the value of which would be \$403,585.

The amount of Asphaltum I am unable to state as I could not obtain the proper data.

The number of employees in and around the coal mines of the State was 1,895 and the average number of days worked was 296 days.

The amount of high explosive used was black powder 176,414 pounds and dynamite 95,015 pounds.

Average amount of coal produced per man in and around the coal mines, coke oven men not included, was 1,107 short tons, number of fatal accidents for every one thousand men employed was two, number of tons for every life lost was 613,073 short tons.

There were 28 accidents in the Utah Coal and Hydro-Carbon Mines in 1906, of which 7 resulted fatally, two wives made widows and five children were left fatherless, three were killed in the Coal Mines and four in the Hydro-Carbon Mines.

I cordially commend the manner, not only with which the operators have furnished me with an account of their production, but with which they have otherwise assisted me in my labors, and complied with all suggestions, which the duties of my position required me to make to them.

TABLE SHOWING THE COAL PRODUCTION IN THE STATE  
OF UTAH FROM 1876 TO 1906, INCLUSIVE.

YEAR	NO. TONS PRODUCED	GAIN	LOSS
1876.....	50,400	.. ..	.. ..
1877 .....	50,400	.....	.....
1878.....	67,200	16,800	.....
1879.....	225,000	157,800	.....
1880.....	225,800	.....	.....
1881 .....	250,000	25,000	.. ..
1882.....	250,000	.. ..	.....
1883 .....	250,000	.. ..	.....
1884 .....	250,000	.. ..	.....
1885.....	213,120	.. ..	36,880
1886.....	200,000	.....	13,120
1887 .....	180,020	.....	19,980
1888.....	259,501	79,500	.....
1889.....	236,651	.....	22,850
1890.....	318,159	81,508	.....
1891.....	371,045	52,886	.. ..
1892.....	361,314	....	9,731
1893 .....	418,049	56,735	.....
1894.....	447,276	59,227	.....
1895.....	172,958	.....	274,328
1896 .....	503,243	330,285	.....
1897.....	582,092	78,849	.....
1898.....	673,297	91,205	.....
1899.....	878,122	204,826	.. ..
1900.....	1,233,978	456,856	.....
1901 .....	1,382,470	148,492	.....
1902.....	1,641,436	258,966	.....
1903.....	1,782,178	120,742	.....
1904.....	1,563,274	... ..	198,904
1905.....	1,602,528	39,350	.....
1906.....	1,839,219	236,691	.....



TABLE SHOWING THE AMOUNT OF COAL SOLD IN SALT  
LAKE DURING 1906, COMPARED WITH 1904 AND 1905.

	Short Tons.
1904.....	214,369
1905.....	214,905
1906.....	264,533
Total.....	693,897

PRODUCTION OF COAL, COKE AND ASPHALTUM.  
IMPORTS, EXPORTS AND CONSUMPTION IN UTAH DURING 1906.

Production.....	Bituminous, 1,839,219	Coke, 282,195	Gilsonite, 11,531
Imported, .....	" 412,647	" .....	" .....
Total, .....	2,251,866	" .....	" .....
Exported, .....	" 67,318	" 115,699	" .....
Consumed in Utah "	2,059,148	" 166,496	" .....

TOTAL PRODUCTION OF COAL IN UTAH DURING THE  
YEAR 1906, BY COUNTIES.

Carbon. ....	1,683,968
Summit .....	63,156
Sanpete .....	5,910
Emery .....	935
Other Small Mines .....	85,250
Total .....	1,839,219

TABLE SHOWING NUMBER OF TONS PRODUCED, NUMBER OF DAYS WORKED, NUMBER OF MEN EMPLOYED, NUMBER OF PERSONS KILLED AND INJURED, AND NUMBER OF POUNDS OF POWDER USED, ETC.

NAME OF MINE	Counties	Short Tons of Coal	Tons of Coke	Days Worked	Men Employed	Fatal Accidents	Non-fatal Accidents	Pounds of Powder	Pounds of Dynamite	Mules and Horses	Steam Boilers	Locomotives	Coke Ovens
Winter Quarters	Carbon	373,978		205	275		2	84,802	40	37	9	1	
Castle Gate	Carbon	331,403	89,072	302	385	2			56,250	40	7		201
Sunnyside	Carbon	627,876	193,123	205	680	1	14		38,650	35	16	2	480
Clear Creek	Carbon	349,432		294	249		1	74,641		40	9		
Grass Creek	Summit	28,504		268	45			3,000		6	3		
Wasatch	Summit	34,592		259	40		1	3,325	75	9	4		
Thomas	Sanpete	5,125		270	15			650		2			
Wales	Sanpete	785		95	2					1			
Huntington	Emery	500		77	2			1,500		2			
Deseret	Carbon	525		85	2			375		1			
Cedar Creek	Emery	435		75	2			1,200		2			
Aberdeen	Carbon	750		95	4			340		4			
Other Small Mines		85,250		215	178			6,021		20			
Gilsonite Mine					200	4							
Total		1,830,219	282,195	2,051	2,064	7	21	170,414	95,015	190	48	3	680

TABLE SHOWING AVERAGE OF COAL SHIPMENTS FROM COASTAL WATERS WITH 1905.

Commodity	Tons for 1905	Tons for 1906	Gain	Loss
Carbon .....	1,683,968	1,444,565	239,403	
Summit .....	63,156	74,911		11,755
Sanpete .....	5,910	4,202	1,708	
Emery .....	935	3,500		2,565
Other Small Mines, .....	85,250	75,350	9,900	
Totals .....	1,839,219	1,602,528	236,691	14,320
Gain, Short Tons.....			236,691	

TABLE SHOWING PRODUCTION OF COAL IN UTAH DURING YEAR 1906, ETC.

Counties.	Total Pro- duction in Short Tons.	Total Pro- duction of Coke.	Average Per Ton.	Days Worked.	Em- ployees.
Carbon.....	1,683,968	282,195	\$1.18	1,281	1,433
Summit .....	63,156		1.17	327	91
Sanpete.....	5,910		1.45	365	18
Emery.....	935		1.00	152	4
Other Small Mines. ....	85,250		1.00	215	178
Totals .....	1,838,219	282,195	\$1.18	2,651	1,895

TABLE SHOWING NUMBER OF MEN EMPLOYED IN COUNTIES IN 1906 COMPARED WITH 1905.

Counties.	1905	1906	Gain	Loss
Carbon .....	1,722	1,433		229
Summit .....	94	91		3
Sanpete .....	12	18	6	
Emery .....	10	4		6
Other Small Mines.....	125	178	15	
Totals.....	1,903	1,805	21	238

COAL PRODUCED IN THE SEVERAL MINES IN UTAH  
FOR 1906.

NAME OF MINE	OPERATED BY	NO. OF SHORT TONS
Winter Quarters.....	P. V. Coal Company.....	373,978.60
Clear Creek.....	P. V. Coal Company.....	349,432.30
Castle Gate.....	P. V. Coal Company.....	333,405.95
Sunnyside.....	Utah Fuel Company.....	627,876.15
Grass Creek.....	Grass Creek Coal Company..	28,564
Wasatch.....	Weber Coal Company.....	34,592
Thomas.....	Sterling Coal Company .....	5,125
Wales.....	W. P. Bavis Coal Company..	785
Huntington.....	P. V. Coal Company.....	500
Deseret.....	Kemmerer Coal Company ...	525
Cedar Creek.....	Cedar Creek Coal Company..	436
Aberdeen .....	Whittemore & Ballinger.....	750
Other Small Mines.....	.....	85,260
Total.....	.....	1,839,219

TABLE SHOWING PRODUCTION OF COAL, NUMBER OF  
POUNDS OF POWDER USED, NUMBER OF FATAL AND  
NON-FATAL ACCIDENTS, NUMBER OF DAYS  
WORKED AND NATIONALITIES OF MEN EM-  
PLOYED BY THE UTAH FUEL AND P.  
V. COAL COMPANIES.

Coal produced .....	1,682,693
Coke.....	282,195
Average days worked.....	296
Men employed . . . . .	1,598
Fatal. . . . .	3
Non-Fatal.....	20
Pounds of Powder....	254,443

NATIONALITIES.

Americans. ....	732
German.....	34
Finn .....	82
Italian ....	226

Austrians .....	278
Swede .....	4
French .....	13
Greek .....	155
Slavs .....	10
Negroes.....	1
Spanish .....	
Mexicans .....	
Japanese.. ..	52
Chinese... ..	1

TABLE SHOWING NUMBER OF FATAL, SERIOUS AND NON-SERIOUS ACCIDENTS AND THE COUNTY IN WHICH THE SAME OCCURRED DURING 1906.

COUNTIES	Fatal	Serious	Non-Serious	Total
Carbon .....	3	7	13	23
Summit .....		1	.....	1
Emery.....			.....	
Wasatch ....	4	.....	.....	4
Sanpete .....			.....	

TABLE SHOWING CASUALTIES OF 1906 COMPARED WITH 1905.

COUNTIES	1905			1906				
	Fatal	Non-fatal	Total	Fatal	Non-fatal	Total	Gain	Loss
Carbon .....	5	33	38	3	20	23	.....	18
Summit .....	1	3	4	.....	1	.....	.....	3
Wasatch.....	1	.....	1	4	.....	.....	2	.....

TABLE SHOWING THE NUMBER OF MINES EMPLOYING  
THE DIFFERENT METHODS OF VENTILATING AND  
THE KIND OF OPENING.

COUNTIES	Character of Opening			Mode of Ventilation		
	Drift	Slope	Total	Fan	Furnace	Natural
Carbon.....	56	2	58	9	1	49
Summit.....	8	2	10	2	.....	8
Emery.....	34	.....	34	.....	.....	34
Sanpete....	4	2	6	.....	.....	6
Uintah.....	25	.....	25	.....	.....	25
Iron.....	15	.....	15	.....	.....	15



Name of Person	Age	Occupation	Residence	Name of Mine	Married	Single	Children	No. Persons Dependent	Date	Cause of Accident
B. L. Boarden		Miner	Winter Quarters	Parriette	Yes	Yes	5	6	April 18	Gas Explosion
W. H. Forman		Miner	Bluff, Utah	Parriette		"			"	"
Elmer Hopkins		Miner	Kanosh, Utah	Parriette		"			"	"
Otto Anesq		Miner	Silverton, Colo.	Parriette		"			"	"
M. Imanaka	29	Miner	Japan	Castle Gate		"			June 9	Fall of Rock
Antone Bende	39	Miner	Castle Gate	Castle Gate		"			Oct. 22	"
Aurabile Pasquale	30	Miner	Sunnyside	Sunnyside	Yes	"		1	Nov. 14	"

The first four named were killed in the Hydro-Carbon Mines.

TABLE SHOWING COMPARATIVELY THE NUMBER OF MINES IN OPERATION AND THE NUMBER OF  
DAYS WORKED IN 1905 AND 1906.

COUNTIES	Number of Mines in Operation in 1905.	Number of Mines in Operation in 1906.	Gain.	Loss.	Average Number Days Worked in 1905.	Average Number Days Worked in 1906.	Gain.	Loss.
Carbon .....	58	61	3	.....	249	296	47	.....
Summit.....	5	5	.....	.....	.....	264	.....	.....
Sanpete.....	6	9	.....	.....	.....	.....	.....	.....
Uintah.....	25	31	6	.....	.....	.....	.....	.....
Emery.....	42	52	10	.....	.....	.....	.....	.....
Iron.....	15	15	.....	.....	.....	.....	.....	.....
Morgan.....	.....	3	3	.....	.....	.....	.....	.....

TABLE SHOWING NUMBER OF LARGE AND SMALL MINES IN THE STATE AND THE NUMBER  
OF EACH THAT WERE IN OPERATION DURING 1906.

COUNTIES.	Number of Mines which Employed More than 6 Men.	Number of Mines which Employed Less than 6 Men.	Total by Counties.	Number of Large Mines in Oper- tion in 1906.	Number of Small Mines in Oper- ation in 1906.	Total Number of Mines in Oper- ation in 1906.
Carbon .....	11	50	61	11	50	61
Summit.....	2	3	5	2	3	5
Sanpete .....	1	5	6	1	5	6
Uintah.....	.....	31	31	.....	31	31
Emery.....	.....	45	45	.....	45	45
Iron.....	.....	15	15	.....	15	15
Total.....	14	149	163	14	149	163

TABLE SHOWING LOCATION, ETC., OF MINES IN UTAH.

NAME OF MINE	NAME OF OPERATOR	COUNTY	NAME OF SUPT.	P. O. ADDRESS.
Winter Quarters.....	P. V. Coal Co.....	Carbon .....	T. J. Parmley.....	Scofield.....
Clear Creek.....	P. V. Coal Co.....	Carbon .....	Thomas Bell.....	Clear Creek.....
Castle Gate.....	P. V. Coal Co.....	Carbon .....	Wm. Forrester.....	Castle Gate.....
Sunnyside .....	Utah Fuel Co.....	Carbon .....	Wm. Elwood.....	Sunnyside.....
Aberdeen .....	Whittemore Ballinger.....	Carbon.. ..	A. Ballinger.....	Price.....
Grass Creek.....	Grass Creek Coal Co.....	Summit.....	John E. Pettit.....	Coalville.....
Wasatch.....	Weber Coal Co.....	Summit.....	T. J. Lewis.....	Coalville.....
Huntington.....	P. V. Coal Co.....	Emery.....	W. B. Williams.....	Castle Gate.....
Deseret.....	Kemmerer Coal Co.....	Emery.....	Thos. D. Reese.. ..	Wales .....
Cedar Creek.....	Cedar Creek Coal Co .....	Emery.....	Wm. Howard.....	Huntington. ....
Thomas.....	Sterling Coal Co.....	Sanpete.....	H. Thomas... ..	Manti .....
Huntington Creek.....	Robins Coal Co.....	Emery.....	D. C. Robbins.....	Salt Lake City.....
Anthracite Coal Co.....	Anthracite Coal Co.....	Iron.....	Robert Kirker.....	Cedar City.....

## DESCRIPTIVE LIST OF MINES LOCATED IN CARBON COUNTY.

### WINTER QUARTERS.

Is located on the Scofield branch of the Rio Grande Western, and is operated by the Pleasant Valley Coal Company, of Salt Lake City. W. B. Williams, General Superintendent; Thomas Parmley, Mine Superintendent, Winter Quarters; Andrew Gilbert, Mine Foreman, Winter Quarters. It consists of one drift opening into number one seam ten feet of clean coal. A fan is used for ventilating purposes, running at the rate of 146 revolutions per minute, producing 56,855 cubic feet at intake and 59,199 at outlet. Employing 233 miners and 42 day men. This mine was inspected five times during the year, twice by Andrew Gilbert, deputy inspector, and three times by inspector. The mine was found each time in a fairly good condition. Coal being mined by pick, haulage being done by electricity. The mine is kept damp by a system of water pipes running through every part of the mine.

### CLEAR CREEK MINE.

Is located on the Scofield branch of the Rio Grande Western, and is seven miles south of Scofield, operated by the Pleasant Valley Coal Company, of Salt Lake City. Thomas Bell, Mine Superintendent; James Russell, Mine Foreman; Thomas W. Thomas, Assistant Mine Foreman. It consists of one drift and one slope, opening into number one seam, from 7 to 14 feet of clean coal. A fan is used for ventilating purposes running at the rate of 75 revolutions per minute, producing 63,025 cubic feet of air at intake and 78,890 cubic feet of air at the outlet. Employing 222 miners and 27 day hands. This mine was inspected five times during the year, twice by Andrew Gilbert, deputy inspector, and three times by the inspector. The mine was found in a fairly good condition each time, with the exception of a heavy squeeze in some parts of the



Mouth of No. 1 mine at Winter Quarters.

17

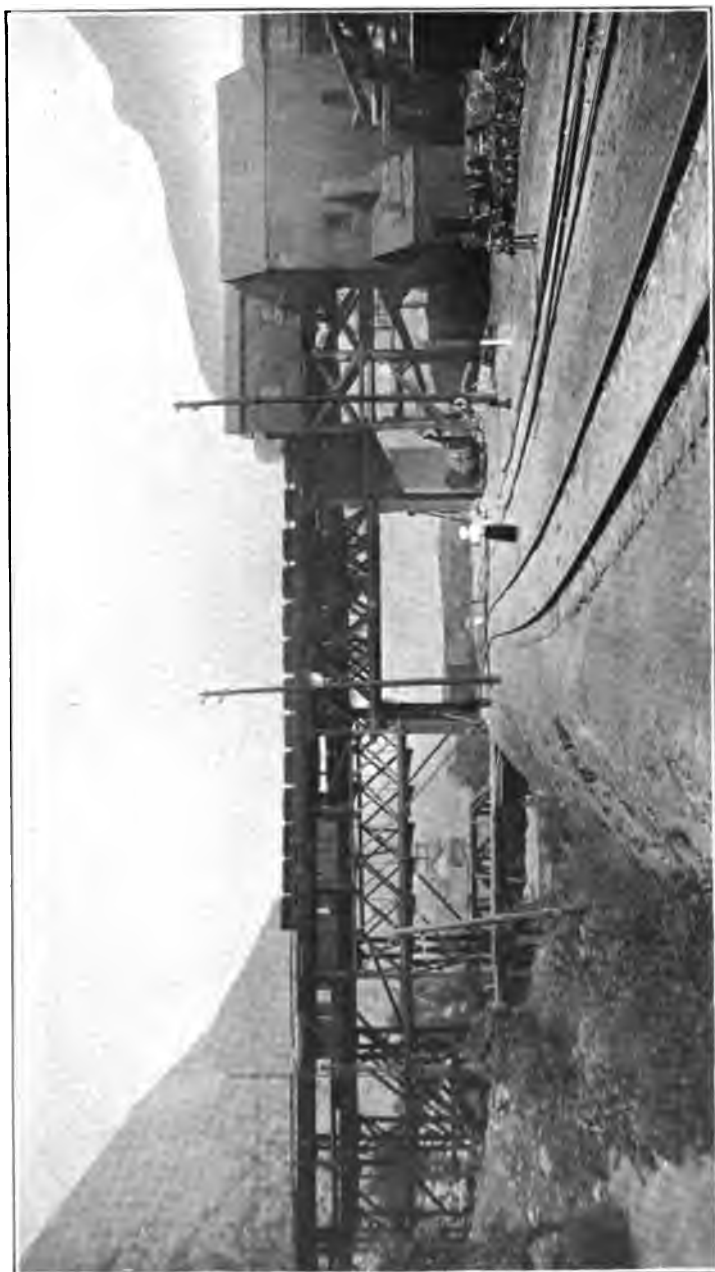


Mouth of Castle Gate Mine.



THE  
FEDERAL  
GOVERNMENT

CHALLENGE AND  
RESPONSE



Castle Gate Bridge.

• 1500 AND

• 1500

mine, which was brought on by opening and running rooms too wide and robbing pillars. This was brought about by our ex-general superintendent, S. Kedzie Smith, who was working for cheap coal and not for the safety of employes and property. The mine is kept damp by a system of water pipes running through every part of the mine.

#### CASTLE GATE MINE.

Is located on the main line of the Rio Grande Western, and is operated by the Pleasant Valley Coal Company, of Salt Lake City. William Forrester, Mine Superintendent; Robert Williams, Jr., Mine Foreman. It consists of one drift opening, going up on a five per cent grade with from 5 to 10 feet of clean coal. A fan is used for ventilating purposes running at the rate of 147 revolutions per minute, producing 79,800 cubic feet of air at intake and 91,219 cubic feet of air at outlet. Employing 255 miners and 70 day hands. There are 204 coke ovens at this plant, using Sunnyside coal to make coke. This mine was inspected six times during the year by the inspector. The mine was found in a fairly good condition with the exceptions of the rooms opened and run too wide and the pillars robbed, which was caused by using too much economy in getting out cheap coal. The main haulage and traveling ways, and air courses were all in a bad condition, there had been nothing done to them for over a year, and partly filled up with old timbers and rocks, all this occurred during ex-General Superintendent Smith's time.

I am pleased to say that our new superintendent is taking hold and doing all in his power to get things cleaned up. This is one of the things that causes a shortage of fuel in our state. If this had been run right during 1905 it would be producing a larger amount of coal today. This trouble has been a great drawback at nearly all the mines. Coal being mined by pick, haulage done by electricity. The mine being kept damp by a water system running throughout the mine.

## SUNNYSIDE MINES.

Are located on the Sunnyside branch of the Rio Grande Western, and are operated by the Utah Fuel Company, of Salt Lake City. W. B. Williams, General Superintendent, Salt Lake City; William Elwood, Mine Superintendent, Sunnyside; Henry Parmley, Mine Foreman at No. 1 mine, Sunnyside; Robert Williams, Sr., Foreman of Nos. 2 and 3 mines. They consist of two drifts and one slope. No. 1 mine is ventilated by a fan running at the rate of 58 revolutions per minute, producing 74,620 cubic feet of air per minute at the intake and 86,400 cubic feet at the outlet, employing 256 miners and 45 day hands. No. 2 and 3 mines are ventilated by a fan running at the rate of 98 revolutions per minute, producing 48,544 cubic feet of air at the intake and 54,000 cubic feet at the outlet, employing inside and outside 249 men.

These mines were inspected six times during the year, twice by Robert Williams, Sr., deputy inspector and four times by this inspector. The same trouble has occurred here as in Clear Creek and Castle Gate in regard to the rooms being opened too wide and the pillars being too small. The timbering and ventilation was not in a very good condition; the main air courses and traveling ways were also in a bad condition. I am pleased to say that the new superintendent is complying with my instructions as to cleaning up the traveling ways and air courses, and also has the new escapement way about completed in No. 1 mine. Nos. 2 and 3 are in a fairly good condition, all places well timbered and good ventilation, all places watered and kept damp.

All these mines are kept damp by a water system running throughout the mine. The coal is mined by pick, and most of the haulage is done by electricity.

I must say that the Utah Fuel and P. V. Coal Companies mines are in a far better condition today than they were six months ago. The miners and employers are on the best of terms.

## INDEPENDENT COAL &amp; COKE COMPANY.

Is located four miles east of Helper, on the line of the Rio Grande Western, and is operated by the Inde-



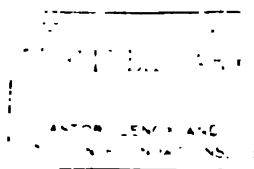
Coke Ovens, Castle Gate.

1. *Chlorophyll a* and *Chlorophyll b* contents were determined by spectrophotometry using the method of Lichtenthaler and Whaley (1987). The total chlorophyll content was calculated as the sum of chlorophyll *a* and chlorophyll *b*.



Mouth No. 1 Mine, Sunnyside.





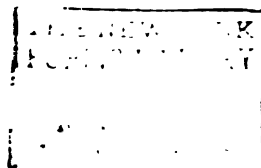


Mouth No. 2 Mine, Sunnyside.

100



Johnson Tunnel, with Mr. Joseph B. Johnson at Entrance



pendent Coal and Coke Company, of Salt Lake City, John Potter, Mine Foreman. It consists of one drift opening into number one vein.

This mine will be one of the leading mines of the State in a short time, as it has a large field of number one quality of coal, and plenty of money behind the company to do a great deal of development work. This mine is working about 20 men.

#### SHARP COAL & COKE COMPANY.

Is located three miles east of Helper, on the main line of the Rio Grande Western, and is operated by the Sharp Coal & Coke Co., of Salt Lake City. James A. Harrison, Superintendent, Helper, Utah. This mine has the making of a big mine in the near future.

#### ABERDEEN MINE.

Is located eight miles northeast of Price, on the main line of the Rio Grande Western, and is operated by the Price Trading Company of Price, Utah, on a seam of coal 18 feet thick.

#### OTHER SMALL MINES.

There are 47 other small mines in Carbon County, producing a small amount of coal for domestic use in Castle and Sanpete Valleys. All these mines have been inspected twice during 1906.

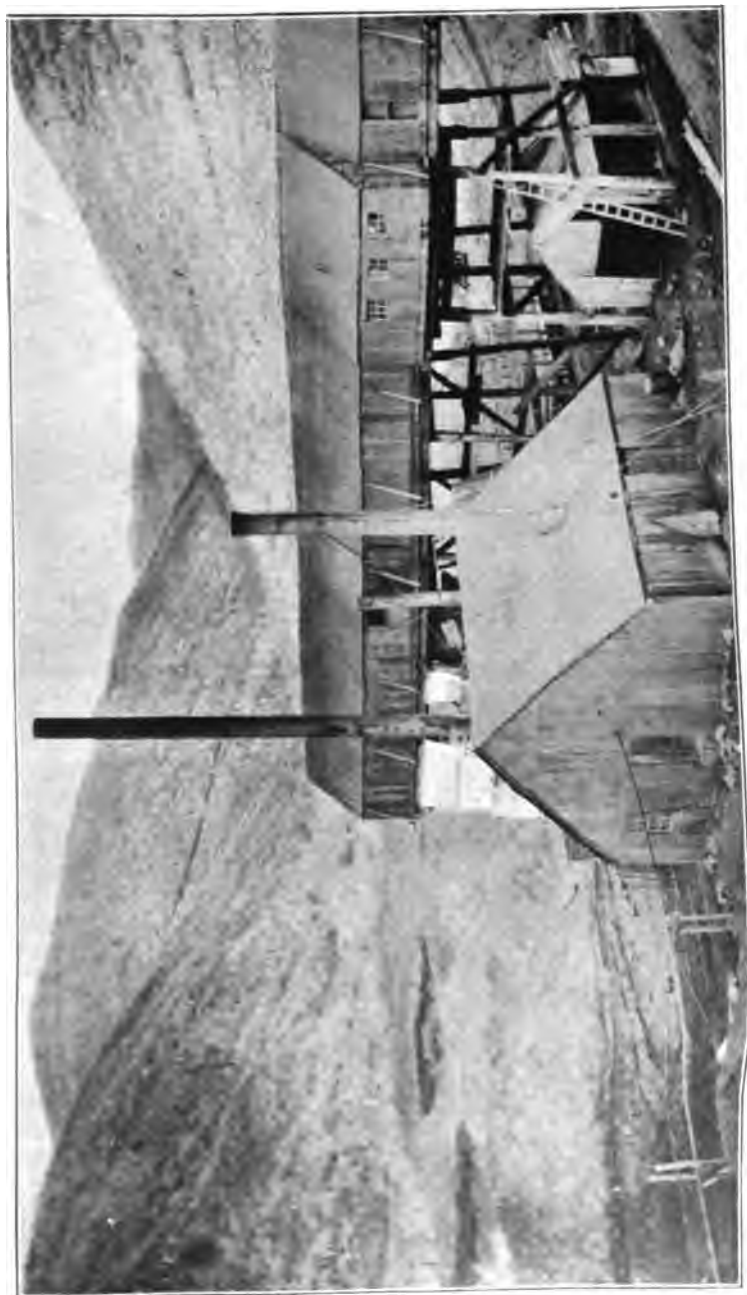
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### DESCRIPTIVE LIST OF MINES LOCATED IN SUMMIT COUNTY.

#### GRASS CREEK MINE.

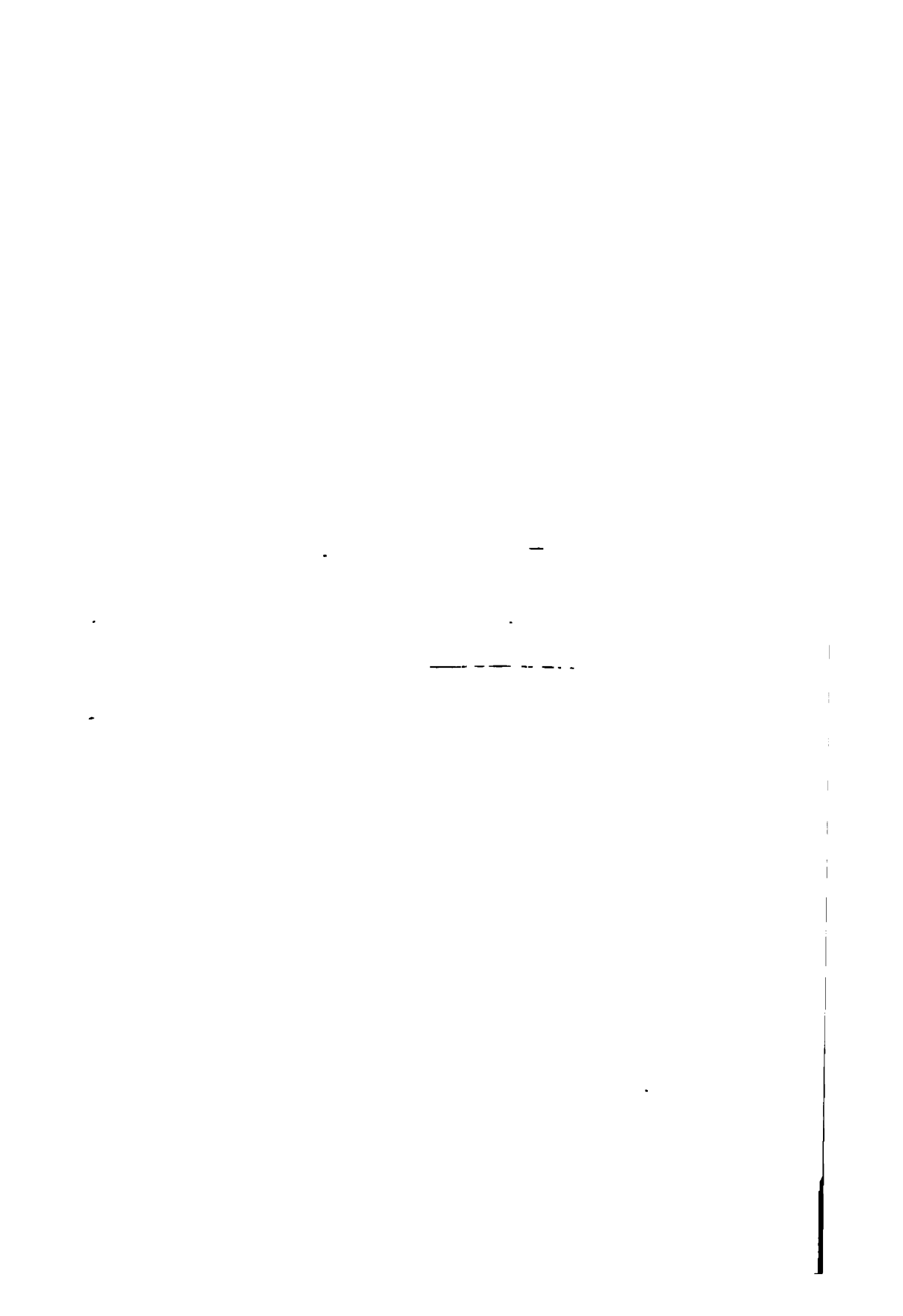
Is located on Park City branch of the Oregon Short Line, eight miles northeast of Coalville, and is operated by the Grass Creek Coal Company, of Salt Lake City. John Pettit, Superintendent, Grass Creek, Utah. It consists of a drift and slope. A fan is used





Grass Creek Dump.





Salt Lake City. H. R. Thomas, Superintendent, Wales, Utah. It consists of one drift. The ventilation is natural. This mine is employing 15 men in and around the mine. This mine was always found in good, safe working condition, well timbered, ventilated and all places kept damp by natural causes.

There are five other small mines in Sanpete County, two in Wales and three in the head of Huntington Creek, producing coal for local trade.

#### DESCRIPTIVE LIST OF MINES LOCATED IN UINTAH COUNTY.

There are 31 small openings in Uintah County, about one-third of them are taking out coal for local trade.

#### DESCRIPTIVE LIST OF MINES LOCATED IN EMERY COUNTY.

There are 45 mines in Emery County, about one-half of them have been taking out coal for local trade and experimenting on making coke, which turned out to be a success, as they made a fair coke out of the coal taken out of Huntington Canyon.

#### DESCRIPTIVE LIST OF MINES LOCATED IN IRON COUNTY.

There are 15 small mines in Iron County, about one-third of them are taking out coal for local trade.

Grand County has several small mines taking out coal for local trade at Green River and Thompson Springs.

I visited all the small mines at least once during 1906, with the exception of Uintah County.

WINTER QUARTERS, UTAH, Feb. 3, 1906.

*Mr. Gomer Thomas,  
State Coal Mine Inspector,  
Salt Lake City, Utah.*

DEAR SIR:—I herewith hand you report of my visit to Winter Quarters Mine No. 1.

I visited this mine on the 29th and 30th of January, 1906, and found the working places in the mine

in good condition, well supplied with props within 100 feet of working face, and I have every reason to believe that the management are doing all they can to secure the safety of the mine.

The haulage way is in good condition. The mine is well watered throughout, the coal slack is kept wet in all the working places, haulage roads, airways, and traveling roads in the mine. Conditions inside of the dyke between the 10th and 11th rises is such that no sprinkling is needed to keep the coal slack wet, there is enough of water in the coal to keep these places wet.

The ventilation is good except in the 8th and 10th levels off 10th raise. This district has a few more men than should be on one split, but preparations are under way to build an overcast over the 10th raise at the 7th level, and when this is completed that condition will be relieved, there will be two splits where there is one now and then ventilation in that part of the mine will be so much improved.

The main return air way from the bottom of the 10th raise up to the rock tunnel that goes down into No. 3 mine is in bad condition and the area is quite small in a number of places, being partially filled up with caves. All of which increases the resistance that the air meets with in its passage through the mine to the fan. I did not take my air measurements, as I understood you got the weekly measurements every month, but the revolutions of the fan was 150 per minute and the water gauge was three inches.

There are about 200 miners and 50 day men in the mine, and they turned out in the month of January, 1906, 34,500 tons of coal, although they were delayed some by storms and scarcity of railroad cars.

(Signed)

ANDREW GILBERT.

WINTER QUARTERS, UTAH, February 3, 1906.

*Mr. Gomer Thomas,  
State Coal Mine Inspector,  
Salt Lake City, Utah.*

DEAR SIR:—I herewith report my visit to Clear Creek Mine on January 31 and February 1, 1906:



Winter Quarters, Looking Down Canyon.



Conditions here are much different than at Winter Quarters. Here at Clear Creek they get 85,000 cubic feet of air with 0.4 in water gauge, and at Winter Quarters they get 70,000 feet with a 3 inch water gauge, consequently the ventilation of the mine is a much easier task.

I found the ventilation good except in the 3 west entry; there was some black damp CO<sub>2</sub> mixed with the air on account of part of the air supplied this part of the mine came over the saved ground where the pillars were extracted, and in this way became mixed with the foul gas that escapes from the faults and upper strata. The officials have agreed to remedy this by keeping the air from traveling that way.

The mine is well watered throughout except on part of the 5th west, but the pipe men were fixing a broken pipe there, and I was informed that this part would be watered that night. The men are kept well supplied with props.

The haulage roads and air ways are in good condition. They have about 200 miners and 42 day men in the mine.

They mined 30,500 tons of coal in January, notwithstanding they also had been delayed with storm and waiting on railroad cars.

(Signed)

ANDREW GILBERT.

WINTER QUARTERS, UTAH, May 19, 1906.

*Mr. Gomer Thomas,  
State Coal Mine Inspector,  
Salt Lake City, Utah.*

DEAR SIR:—According to your request I have inspected the Clear Creek and Winter Quarters Mine, and herewith give you my report of the same.

I visited the Clear Creek Mine on the 15th and 16th of May, 1906. The ventilation is good throughout the mine.

The rooms and pillars are well timbered, and they are well supplied with props within 100 feet of the working places.

In the low coal district about from 9 to 12 inches

on a  $1\frac{1}{2}$  cartridge stick is the amount of powder used in a shot or blast. In the high coal, while 20 inches is considered to be the limit, there may be some who once in a while use more, but from the information that I got in going round the mine, from 16 to 20 inches is generally used for a shot.

Soil or clay brought from the outside is generally used for tamping. They are having a good deal of trouble with water just now, the new mine is flooded, and the 5th left entry and the dip workings below the 7th right is flooded with water, so that they cannot get into them at present, but they are putting in larger pipe, and may soon overcome the difficulty.

Coal slack was wet except on the inside part of the 7th west entry. They are turning some rooms here, which makes it somewhat dusty, and the pipe line does not reach it, but they are going to remedy this soon. There are about 170 miners and 40 day men at work in the mine. I consider the mine in good working condition.

I visited the Winter Quarters No. - Mine on the 17th and 18th. The ventilation good except in the dip workings, poor stoppings allow most of the air to leak into the return before it gets to the face of the entry. But this is being remedied; they are repairing the stoppings and in a short time the ventilation will be very good. The rooms and pillars are well timbered and the places are kept well supplied with props with in 100 feet of the working places.

From the best information I could obtain, from 14 to 20 inches of powder is used to a shot, and dirt tamping, soil or clay from the outside.

Coal slack and brattice cloth is kept well watered throughout the mine. I traveled the return air way, as you desired me to do, from the bottom of the 10th raise to the fan, and it is in about the same condition as it was three months ago. There are a number of caves in it, some of them quite long, and although they have been and still are able to crowd enough air through it to ventilate the mine, I consider it in a poor condition, and it will require a great amount of labor to be expended on it to put it in a condition to supply the demands of the mine in the future. The caves are leveled off so that the friction of the air traveling over

them is reduced as much as it well could be at those points under present conditions. I think the smallest area is between the overcast over the dip and the one over the bottom of the 8 rise rope road.

With these exceptions I consider the mine in good working condition.

Yours truly,  
(Signed) ANDREW GILBERT,  
Deputy Inspector.

SUNNYSIDE, UTAH, February 22nd, 1906.

*Mr. Gomer Thomas,*  
*State Coal Mine Inspector,*  
*Salt Lake City, Utah.*

DEAR SIR:—I respectfully submit the following report to you.—On February 17th, 1906, I made a careful examination of Sunnyside Mines No. 2 and 3, with the following results. I found the haulage roads, traveling roads, air courses and overcasts in good condition, the rooms in good and safe condition with currents as required, the pillars and stumps in as good condition as they can be, with the air traveling as required and both mines well watered, altogether the mines are in a good and safe condition.

No. 2 Old Mine.		Water Canon No. 3.	
Barometer.....23.40	Fan Rev....	100	
Thermometer..29.....	Intake,.....	18,000	cubic feet of air.
Fan Rev.....60.....	Return.....	20,000	" " "
Water Gauge..6-10.			
Intake.....	49,000	"	" "
Return.....	53,000	"	" "

The company is opening a new mine in Water Canon, in the old vein, they are in 180 feet and just got the full thickness of coal.

Yours respectfully,  
ROBERT WILLIAMS,  
Deputy Inspector.



SUNNYSIDE, UTAH, February 22nd, 1906.

*Mr. Gomer Thomas,*  
*State Coal Mine Inspector,*  
*Salt Lake City, Utah.*

DEAR SIR:—I herewith submit the following report to you, on the Sunnyside Mines No. 1 and 4. I visited these mines on February 19th with the following results. I found the hauling roads traveling roads, air courses, and overcasts in good condition, and the rooms in good safe condition, they are working the new mine considerable now, they are using naked lights in general, I found two places working with safety lamps. The mine generates some firedamp but they brattice well and strong currents of air going through all the time so I consider the mine perfectly safe, the pillars and stumps are in good condition, all places well watered and timbered.

The mines in Sunnyside are working every day. I examined the saeles and found them to be correct.

Yours respectfully,

ROBERT WILLIAMS,  
Deputy Inspector.

SALT LAKE CITY, UTAH, July 23rd, 1906.

*Mr. W. B. Williams,*  
*Gen. Supt. Utah Fuel and P. V. Coal Co.,*  
*Castle Gate, Utah.*

DEAR SIR:—In compliance with the Mining Laws of Utah I herewith hand you a report of my visit of inspection to your mines, to which I made several visits during the last quarter.

On my visit of inspection to Sunnyside mines I found them in a fairly good condition with the exception of No. 4. This mine is not as I would like to see it, as the ventilation is not as good as it ought to be. This is mostly on account of having the one door on the slope. When this door is open the air is shut off in a great many of the working places, and as some of

the entries give off a good deal of gas and while the door is open it gathers and becomes dangerous.

I would suggest here that you would rush the work on the three overcasts that are now started, which would do away with all this danger.

I find that all the stoppings in No. 4 are made of lumber instead of rock as the law requires. I also find that the rooms are turned too wide off the entries, leaving too small of a pillar for the safety of the mine.

All the main haulage roads are piled up with coal and dirt which makes it very bad and dangerous for those who have to travel over them and work on the same. I find this latter condition in all the mines.

As to inspection of Nos. 2-3 and 5 mines would say that Robert Williams, Sr., inspected them and found them in fairly good condition.

On my visit of inspection to Castle Gate Mine I found them, in general in a good condition, with the exception of the rooms being driven too wide and the roads are in a bad condition on account of their being filled up with coal and dirt.

The main return and traveling ways are in a very bad condition on account of being filled with debris making them too low for proper travel and to carry the amount of air necessary. I hope you will see to this as soon as possible.

As to inspection of Winter Quarters and Clear Creek Mines will say Andrew Gilbert inspected them twice during the last quarter and found both mines to be in very good condition.

There are several important matters I desire to talk over with you in the near future.

Respectfully yours,

GOMER THOMAS,  
State Coal Mine Inspector.

SALT LAKE CITY, UTAH, April 24, 1906.

*Hon. John C. Cutler, Governor State of Utah,  
Salt Lake City:*

SIR:—The following is a copy of my report to the American Asphaltum Company:

This is to certify that I have this day, accord-

ance with section 15 of the Laws of Utah, 1905, made an examination of the Pariette Mine.

I found that there had been an explosion, resulting in the loss of the lives of four men by suffocation and which explosion was caused in my opinion by the igniting of a small pocket or feeder of carbonated hydrogen gas, as I found several small feeders in the lower south level, at the bottom of the shaft, which is eight hundred sixty feet deep. I carefully examined the shaft and found it was in a thoroughly good, safe working condition.

The shaft and the workings were all wet. The mine had been closed down since 9 p. m., April 18th to the time I made the examination. I went down twice after sending my safety lamp down on the cage. I took the mine foreman and two other men with me. I found the ventilation was good under the circumstances and satisfactory: I also found the ladder was about twenty-five feet from the bottom of the shaft, which would make it so that a man could climb to the ladder.

In my opinion all of the men that were working in the shaft at the time of the accident, became bewildered on account of not having experience in such accidents. As the explosion was very feeble, the flame did not cover over twenty feet of ground, hardly enough to heat the Gilsonite; but caused enough smoke and after damp to cause suffocation.

There were six men in the mine at the time, two of them were on the sixty foot level, two worked in the lower level and two in the shaft. One of the men in the lower level must have set off a small amount of gas. They then ran out of the level, which was twenty-five feet long, and went down the shaft fifteen feet to the bottom, where the other men were working. They then called on the men on the sixty foot level, to ring the danger signal and ring down the cage. The cage came down to where it had been stopping all day—at the bottom of the shaft; they then called on the men on the sixty foot level to lower the cage. This was done and the signal given to hoist. But when the engineer tried to hoist, he found the cage was fast and could not move.

According to the evidence I got from these men

that were working on the day shaft, the men in the shaft were getting ready to put in a square set; in order to do this they had taken out the two planks that were used to run the cage from the bottom up, it looks to me as if they got excited and did not guide the cage past the bottom of the set of timbers, which were four feet from the bottom, the men on the sixty foot level started down to help them free the cage; they got down about thirty feet and had to return on account of smoke, they then started for the top up the ladder, which was eight hundred feet to the top of the shaft, and gave the news of the accident, then the rescuing party started down the ladder and when they got to the sixty foot level they also had to turn back to the sixty foot level and did not get to the men for some four hours after the accident, the fan had been going all this time; the air pipes were down to the lower level and also a two inch air compressor pipe was working right to the bottom.

As to the cause of the explosion, it is one of those that are unforeseen. According to the evidence that was given me by the men that were working on the morning shift, and who quit work at 4:30 p. m., the ventilation was good, and the mine was clear of gas. At 4:45 p. m. the night shift had started to work and at that time the explosion occurred, which was only fifteen minutes after the day men had gone up, so it is reasonable to think that they struck a small feeder of carbonated hydrogen. I will say that the mine should now be worked with an approved safety lamp at this and the lower levels.

Prior to the accident there had never been any evidence of the existence of a sufficient volume of gas to warrant the installation of safety lamps and no real danger from gas has ever existed in this mine prior to this time of the explosion, April 18th. The possibility of a dangerous volume of gas again being encountered in the future operation of the mine must now be recognized and prudence requires that safety lamps be installed on the fifteen feet above shaft level and I accordingly order that such lamps be used on this level in the future.

I do not wish this order to be construed as a criticism of your failure to use such lamps in the past.

But on the contrary, my own inspection and the most thorough investigation possible, have led me to believe that open lights were proper and safe at all times prior to this accident, and there has been no discoverable evidence to warrant any interference of any danger whatsoever from such lamps.

Yours truly!

GOMER THOMAS,  
State Coal Mine Inspector.

#### CASTLE GATE MINE SHOOTING REGULATIONS.

The following regulations for drilling shot holes, charging and firing the same, will hereafter be in effect at Castle Gate Mine, and must be strictly carried out by all parties.

1. The mining must extend at least six inches beyond back of holes in all cases and 12 inches at all places beyond and towards the right side of holes.

2. All holes must be at least  $2\frac{1}{2}$  feet in length. No shorter holes will be fired.

3. All coal dust must be extracted from holes before they are charged.

4. No holes must be charged with more than 5 sticks of powder.

5. No material whatever except the wet wood pulp furnished by the company must be used in tamping holes.

6. No shots shall be fired unless within 30 yds are in wet condition so that dust cannot be raised by windy shot.

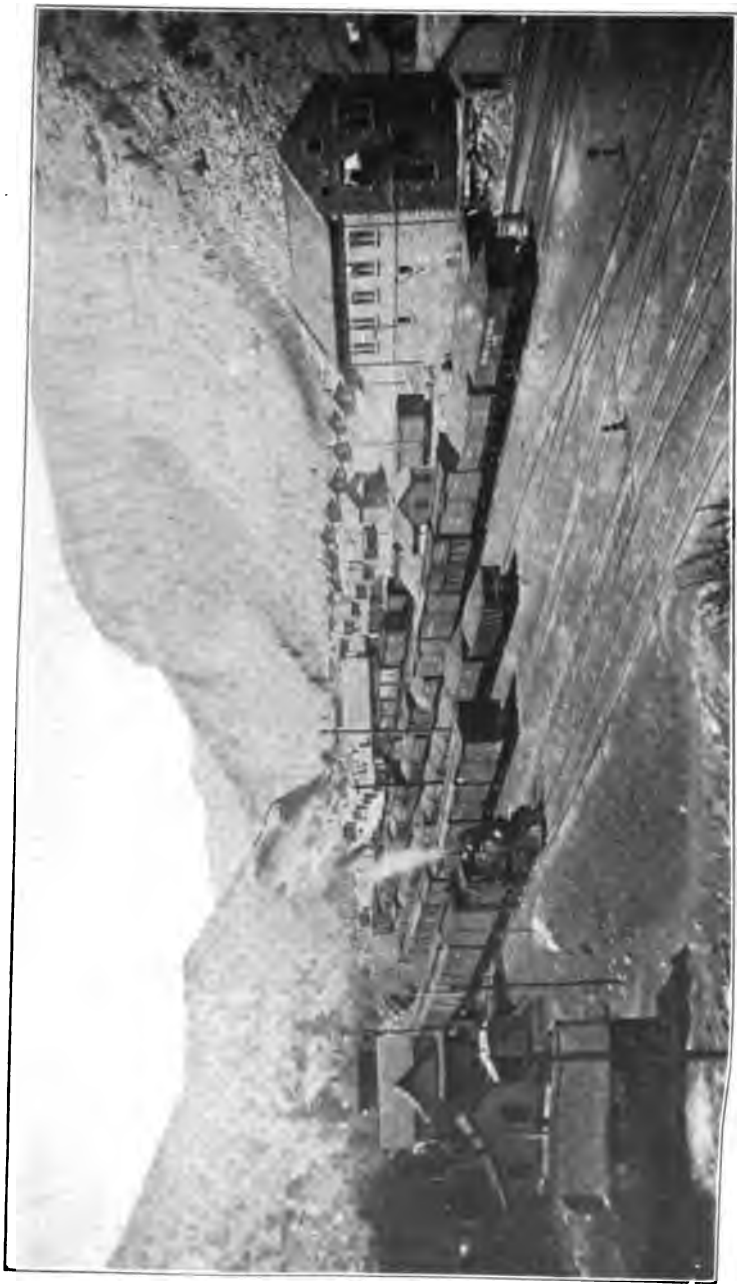
7. Standing holes or parts of standing holes must not be recharged.

8. The hole in tight corner must be at least 1 foot from rib at back end of hole.

9. In solid faces holes must not be more than 5 feet apart horizontally, and not less than two such holes will be fired.

10. In coal over six feet high no hole must be more than 5 feet in height above the floor at back of hele in shooting bottom bench.

11. In high coal bottom bench must be shot down before shots are fired in top bench.



Castle Gate, Looking up the Canyon.

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12. The object of the above rules is to prevent and remove the danger from blown out or windy shots, and it shall be the duty of all firemen in addition to the above rules, to refuse to shoot any holes which in their judgment may be dangerous whether the circumstances are fully covered by the rules or not. The firemen are expected to always be on the safe side.

W. B. WILLIAMS,  
Gen. Supt.

WM. FORRESTER,  
Mine Supt.

FOLLOWING ARE THE IMPROVEMENTS MADE AT THE  
CASTLE GATE MINE DURING 1906.

In the work of improvements at Castle Gate, a new box car loader to handle nut coal has been installed, and is working very nicely. A large reservoir is also under construction, and which we hope to have completed in a few weeks. This will enable us to clean out the old reservoir once or twice a year, as the occasion may require, and will also furnish a better quality and larger quantity of pure water than we have been having heretofore.

A large amount of money has been expended in the latter part of this year for cleaning up the traveling roads and the air courses, and for repairs to buildings, etc., in and around the mine.

A large number of mine cars have been cut down in height at considerable expense in order to enable us to mine and in the low coal that we are operating at present in the dip workings, and also in the western part of the works here.

Several changes have been made in the top works of this plant and will prove economical in handling the tonnage and other operation of the work in the future. Within the past thirty days a change has been made in the lighting system by installing the three wire system. We have also established a system of lights along the main street of the town; this is a great improvement in the way of traveling after the sun goes down.

A steam line has been run from the power house to the hotel that will replace the present method of heating the same by stoves, thereby giving better satisfaction, and minimizing the danger from fire.



#### IMPROVEMENTS AT WINTER QUARTERS.

At this camp, a large number of new mine cars have been added to the equipment. A Christy Box Car Loader has been installed, and is handling the coal to our entire satisfaction. A new dumping chute for run of mine coal has also been put in at this mine, and a roof over the bridge and tippie will be completed by the 1st of December, which will shelter the men from the storms, and also add materially to the rapid handling of the output at this place.

A new tunnel is planned out, and work on this will commence December 1st to reach the coal in old No. 4 mine. A large body of coal has been left in old No. 4 mine, and quite an extensive working face has been developed, and this tunnel is intended to bring the coal from that point down through No. 1 mine, thereby enabling the handling of this product over one tippie. This tunnel will be in the neighborhood of a little over 900 feet in length through solid rock, but the benefits to be derived in the future operations at this plant will justify us in making this expenditure.

#### IMPROVEMENTS AT CLEAR CREEK.

At this camp during the year 1906, we have installed one new Triplex Electric Pump in the mine, one 66 inch by 16 foot horizontal tubular boiler has been added to this plant, and an additional loading chute for run-of-mine coal in connection with the present tippie, and two new box car loaders, one Ottumwa Loader and one Christy Loader, will be installed by the middle of December, and also a new loading track, which will make the 5th at this point, will be in, we hope, by December 1st.

No. 2 mine has been driven to a distance of about 2000 feet from the opening and some cross entries have been driven off of the main entries. A steam hoist is now being put in position to haul the coal from this mine, and do away with horse power that has been in use up to the present.

With the increased facilities for handling the product here, we expect by the 1st of January to produce, at least, 1800 tons per day from these mines.

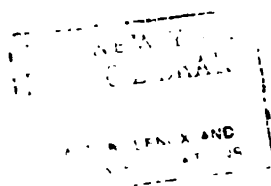


Mouth of Mine at Clear Creek.

1944  
JAN 10 1944  
RECEIVED  
U. S. AIR FORCE  
OFFICE OF THE  
JUDGE ADVOCATE  
GENERAL  
WASHINGTON, D. C.



Hospital at Clear Creek.



The large Boarding House has been remodeled and repainted, and it is equipped with all the facilities and appurtenances for taking care of a large number of boarders, and is now considered one of the finest Boarding Houses or Hotels in this part of Utah. A steam line has been run from the power house to the Boarding House that will replace the present method of heating the same with stoves, thereby giving better satisfaction and minimizing the danger from fire.

The Store and Office Building has also been tuched up with a fresh coat of paint, a fence has been built around the Hospital, the yard graded and seeded, and has produced a very nice lawn there, which is quite an embellishment to this feature of the ming camp.

#### IMPROVEMENTS AT SUNNYSIDE.

At Sunnyside, a large amount of money has been expended in improvements, and new machinery, and part of which has been installed, and the other part of which is on the road, and will be installed just as soon as it reaches Sunnyside.

A new mine, No. 5, has been opened in Water Canon, and driven for a distance of about 1500 feet. The indications are that this will be a large producer in the near future. Nothing at present has been driven except the entries, no rooms have been turned as yet in this mine. A new bridge has been built across the canon enabling the handling of the cars and tonnage from this mine.

The fans at Nos. 2 and 3 Mines have been changed from steam to electric driven by installing electric motors at both places.

Two new boilers of 125 H. P. each were installed in the fore part of the year. A new Williams Jumbo coal crusher with an Ideal Engine 19 x 18 to run it has been put in operation on the No. 2 side of the crushing plant.

Thity new coke ovens have been completed, and equipped with the necessary tracks, larry cars, etc., to operate the same, making a total of 480 ovens in operation at present. One hundred and seventy additional ovens are just about completed, and will, no doubt, be in action by February 1st. This new block of ovens is

being built to the south and east of the present coke plant.

A large bin is erected with a capacity of 1800 tons to take care of the crushed coal for supplying these ovens, and it is expected and hoped that the necessary tracks will be put in, and permit us to begin operating these ovens by the 1st of February, as stated above. The necessary larry cars and electrical equipment are on the ground and partially installed to handle the output from this new plant.

A large water line from Sunnyside camp up over the mountain and down to Range Creek was completed and put in operation early in the year, and it is now supplying a sufficient quantity of very fine water for domestic and other uses at the Sunnyside camp. The magnitude of an undertaking of this kind can only be appreciated after one has climbed the mountain some 2000 feet higher than the altitude at the Sunnyside Depot.

Forty-eight substantial and comfortable cottages have been built this year, and are, at present waiting in the hands of the painters, who expect to have the same completed within the next week or ten days.

Three thousand feet of eight inch pipe had been installed and also 2500 feet of three inch cast iron pipe to care for the new ovens and the new cottages, so that there will be ample fire protection as well as sufficient water facilities for all domestic purposes.

A new store building has also been erected in the lower end of the Sunnyside camp in order to accommodate the people living at that end of town, and remove the necessity for their traveling a long distance to the old store.

A new thirteen ton Generator Electric Locomotive has also been purchased to assist in handling the output in these mines, and one hundred new mine cars are being built to aid the operations; also an order has been placed for one hundred additional cars for this plant.

In addition to these improvements mentioned, we are now spending a sum of about \$5000.00 in replacing three inch water pipe in the upper part of town with a six inch pipe. This improvement will prove of great value giving a larger supply of water, and also in



Sunnyside, Looking North.



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case of fire, will be far superior to the capacity of the water line in use at present.

At Sunnyside, a large comfortable wash house has been built close to the hotel, the same has been equipped with shower baths, and the necessary apparatus for the men to bathe in, also a large number of lockers have been made so that each border can put his clothing away in safety under lock and key.

At all the mining camps, in addition to the improvements mentioned above, large sums of money have been spent in cleaning up the road ways and improving haulage tracks and air ways that have been over looked in previous years.

At all the mining camps, changes have been made in handling the Boarding Houses, the same have been renovated and remodeled to some extent, and placed in the hands of attentive and competent people, who are giving satisfaction to the patrons.

Following is a statement of the average wages of the miners at the various mining camps for the year, and also list of wages paid to all company men:

Miners:

Castle Gate	\$3.58	per day.
Clear Creek	3.78	"
Winter Quarters	3.62	"
Sunnyside No. 1	3.32	"
Sunnyside No. 2	3.63	"

Coke Pullers, \$2.82 per day.

Engineers, Power House, \$90 per month.

Engineers, Crushers, 34½c per hour.

Mechanics, 37½c per hour.

Firemen, \$82.50 per month.

Blacksmith, 40½c per hour.

Weighman, pit car, \$82.50 and \$60 per month.

Weighman, railroad car, \$60 per month.

Dumpers, 34½c per hour.

Outside laborers, 27½c per hour.

Spraggers 18½c per hour.

Couplers 13½c per hour.

4-4 Car Droppers, 31½c per hour.

Stable Boss, \$75 per month.

Stable Men, \$70 per month,

Teamster, 28½c per hour.  
 Carpenter, 37½c per hour.  
 Fire Boss, \$90 per month.  
 Brattice Men, 34½c per hour.  
 Wire Men, 37½c per hour.  
 Timber Men, 34½c per hour.  
 Water Men, 34½c per hour.  
 Track Men, 37½c per hour.  
 Roller Men, 34½c per hour.  
 Motor Men, 40½c per hour.  
 Hoist Men, 37½c per hour.  
 Rope Riders, 37½c per hour.  
 Drivers, 34½c per hour.

In addition, I wish to add, that the improvements installed and the large amount of money expended for installing the same are merely a bagatelle compared to the intended changes and additions to the property that will, no doubt, take place next year, as we now have under consideration the development of new mines and a long rock tunnel for carrying water by gravity system at Sunnyside, and for bringing necessary timbers from Range Creek, which is expected will supply all of the mining camps now in operation.

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## DESCRIPTIVE LIST OF HYDRO-CARBON MINES IN UINTAH COUNTY.

### THE GILSON ASPHALTUM COMPANY.

Located at the terminus of the Uintah Railroad, sixty miles northwest of Mack, Colo., on the Rio Grande Western, and is operated by the Gilson Asphaltum Co., Dragon, Utah, under the entire supervision of Captain Cooley, who is also general manager of the Uintah Railroad. They are now working three shafts and one drift on a seam of gilsonite seven feet thick, employing 38 men. The mine is ventilated by natural ventilation; they have a pipe line nearly completed, which will act as a water system for sprinkling the mine.

On my last visit Nov. 1, I found the mine in a fairly good condition as to timbering and ventilation,



Gilsonite Mine at Dragon.





Dragon Hotel.

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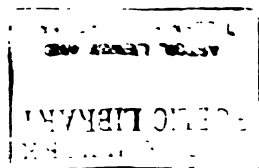
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Dragon Hotel.





but found the mine dry and dusty, which is against the law, and under this condition the mine becomes very dangerous, so my instruction was to put in water system at once. The management promised to do so and have it completed in three weeks. The production of this mine was 9,803 short tons, at a cost of \$5.00 on car at mine, and \$10.00 freight to Mack, which would be \$15.00 per ton f. o. b. on main line of Rio Grande Western, and is selling on the eastern market for about \$35.00 per ton. Valuation of this product on the market \$343.105.

This is the largest gilsonite company in the west, and have spent thousands of dollars in development work, without the cost of building 56 miles of railroad from Mack to Dragon. They have millions of tons of gilsonite in sight. Wages paid at this mine: Superintendent, \$125.00 per month; miners, \$3.00 per day for 8 hours' work. The mine is lighted by electricity. I am pleased to say that the management is doing all that is in their power to comply with the law as to the safety and comfort of their employees.

#### AMERICAN ASPHALTUM ASSOCIATION.

Located 10 miles northwest of Dragon, on the Uintah Railroad, and is operated by the American Asphaltum Association of St. Louis, Mo., and is under the supervision of Max E. Smith of Dragon. On my last visit to this mine I found the mine in a good and safe condition, all places well timbered, employing 6 men under a lease. The mine is opened with a cut on a six foot vein of gilsonite. Cost of mining is \$3.00, \$3.00 freight from mine to Dragon and \$10.00 from Dragon to Mack. The mine produced 378 short tons during the year, with a valuation of \$13,230.00.

#### RAVEN MINE.

Located a little northwest of Fort Du Chesne, and operated by the Raven Mining Company, and is under the supervision of Mr. Farren. I made no visits to this mine during the year, but requested a data on their output, and they did not respond, so I cannot

give an account of their development. As near as I can find, they are employing about 30 men doing prospecting work.

There are several other companies in this county doing a little development work, employing about 40 men.

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## DESCRIPTIVE LIST OF HYDRO-CARBON MINES IN WASATCH COUNTY.

### PARIETTE MINE.

Located at Pariette, 30 miles south of Fort Du Chesne, operated by the American Rubber and Asphaltum Company of Chicago, Ills., under the supervision of Mr. D. Rawstron, J. Chalesworth mine foreman. This mine has been shut down since April 18, excepting a few men who are doing assessment work. On my last visit to the mine on April 24th, I found there had been an explosion, resulting in the loss of four lives by suffocation. A full report of the same will be found in my report to the company. This mine employed 35 men up to the time of the accident, producing 1,350 short tons of gilsonite, at a valuation of \$47,250.

There are several other small mines in Wasatch county, and one ozokerite mine 7 miles northeast of Tucker, employing something like 30 men, prospecting and doing development work. At present they are putting in a steam hoist. I have but very little data of this mine, on account of not making any visits to this mine.

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## DESCRIPTIVE LIST OF HYDRO-CARBON MINES IN UTAH COUNTY.

### TUCKER ASPHALTUM MINE.

Located 8 miles northeast of Tucker on the main line of the Rio Grande Western, operated by the Amer-

ican Rubber and Asphalt Company of Chicago, Ills., under the supervision of D. Rawstron, Gomer Reese mine foreman. I have made several visits to this mine during the year. On my last visit of inspection to this mine, on Nov. 13, I found the mine in general in a good condition, well timbered and ventilated and all places kept damp. This mine is worked under a long wall system. They are producing about 30 tons of asphaltum rock per day, which is shipped to Chicago for treatment, employing about 40 men in and out of the mine.

The ozokerite mines in this county at Colton, have been closed down during 1906, for causes unknown to the inspector.

SALT LAKE CITY, UTAH,  
April 24, 1906.

*American Asphaltum and Rubber Co., Woman's Temple,  
Chicago, Illinois:*

GENTLEMEN:—This is to certify that I have this day, according to section 15 of the Laws of Utah of 1905, made an examination of the Pariette mine.

I found that there had been an explosion, resulting in the loss of the lives of four men by suffocation, and which explosion was caused by the igniting of a small pocket or feeder of carbonated hydrogen gas, as I found several small feeders in the lower south level, at the bottom of the shaft, which is eight hundred and sixty feet deep. I carefully examined the shaft and found it was in a thoroughly good, safe working condition.

The shaft and the workings were wet. The mine had been closed down since 9 p. m. April 18th to the time I made the examination. I went down twice after sending my safety lamp down on the cage. I took the mine foreman and two other men with me. I found the ventilation was good under the circumstances and satisfactory; I also found the ladder was about twenty-five feet from the bottom of the shaft, which would make it so that a man could climb to the ladder.

In my opinion, all of the men that were working

in the shaft at the time of the accident, became bewildered on account of not having experience in such accidents. As the explosion was very feeble, the flame did not cover over twenty feet of ground, hardly enough to heat the gilsonite, but caused enough smoke and after damp to cause suffocation.

There were six men in the mine at the time, two of them were on the sixty foot level, two worked in the lower level and two in the shaft. One of the men in the lower level must have set off a small amount of gas. They ran out of the level which was twenty-five feet long, and went down the shaft fifteen feet to the bottom where the other men were working. They then called on the men on the sixty foot level to ring the danger signal and ring down the cage. The cage came down to where it had been stopping all day—at the bottom of the shaft; they then called on the men on the sixty foot level to lower the cage. This was done and the signal given to hoist. But when the engineer tried to hoist, he found the cage was fast and could not move it.

According to the evidence I got from the men that were working on the day shift, the men in the shaft were getting ready to put in a square set; in order to do this they had to take out the two planks that were used to run the cage from the bottom up. It looks to me as if they got excited and did not guide the cage past the bottom of the set of timbers, which were four feet from the bottom, the men on the sixty foot level started down to help them free the cage; they got down about thirty feet and had to return on account of smoke, they then started for the top up the ladder, which was over eight hundred feet to the top of the shaft, and gave the news of the accident, then the rescuing party started down the ladder, and when they got a little below the sixty foot level they also had to turn back to the sixty foot level and did not get to the men for some four hours after the accident, the fan had been going all this time, the air pipes were down to the lower level and also a two inch air compressor pipe was working right to the bottom.

As to the cause of the explosion, it is one of those that are unforeseen. According to the evidence that was given me by the men that were working on the

morning shift, and who quit work at 4:30 p. m., the ventilation was good, and the mine was clear of gas. At 4:45 p. m. the night shift had started to work, and at that time the explosion occurred which was only fifteen minutes after the day men had gone up, so it is reasonable to think that they had struck a small feeder of carbonated hydrogen. I will say that the mine should now be worked with an approved safety lamp at this and the lower levels.

Prior to this accident there had never been any evidence of the existence of a sufficient volume of gas to warrant the installation of safety lamps and no real danger from gas has ever existed in this mine prior to this time of the explosion, April 18th. The possibility of a dangerous volume of gas again being encountered in the future operation of the mine, must now be recognized, and prudence requires that safety lamps be installed on the fifteen feet above shaft level, and I accordingly order that such lamps be used on this level in the future.

I do not wish this order to be construed as a criticism of your failure to use such lamps in the past, but on the contrary, my own inspection and the most thorough investigation possible have led me to believe that open lights were proper and safe at all times prior to this accident, and there has been no discoverable evidence to warrant any interference of any danger whatsoever from such lamps.

Yours truly,

GOMER THOMAS,

State Coal Mine Inspector.

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SALT LAKE CITY, UTAH,  
November 19, 1906.

*American Asphaltum, Rubber and Gilsonite Co.,  
Chicago, Illinois:*

GENTLEMEN:—In accordance with Section 13 of the Coal and Hydro Mining Laws of the State of Utah for 1905, I herewith hand you my report of my official visit of inspection to your asphaltum mines, eight

miles northwest of Tucker, in the county of Utah. on November 13, 1906.

I went through the mine in company with Mr. D. Rawstron and Mr. Gomer Reese. I found the mine in a good, healthy condition, well timbered and good ventilation. I found in places large piles of asphaltum stored away ready to ship. As to the vein of asphaltum, I found it looking very favorable, it would average about 14 inches in width. I was pleased to see that there had been a great improvement made in the mine since my last visit, as to safety and ventilation.

There were 25 men working in the mine and 15 teams hauling to the railroad. While at the mine I examined one of the employes as to the competency to act as mine fire boss, so I issued a certificate to Mr. Richard Smith, who I found was a practical miner and also a sober man, I gave him instructions as to his work, that he had to visit the mine every morning, report the condition in regards to its safety, also go through the mine before the men started to work after dinner, on leaving the mine to report in a book, which is kept for that purpose, and also fill a blank of the general report of the day, which should be signed by the fire boss and mine foreman, the original to be sent to the general office and a copy to be kept in the office at the mine. I furnished Mr. Rawstron with blanks for the same. I also sent him a copy of the general rules which must be posted at the mine. I also gave Mr. Reese, the mine foreman, instructions to comply with the mining laws of Utah. If he carries out my advice you will always be on the safe side of the law.

Hoping you will continue on with the good work.

Respectfully yours,

GOMER THOMAS,

State Coal Mine Inspector.

SALT LAKE CITY, UTAH, November 5, 1906.

*Mr. W. S. Cooley, General Manager Uintah Gilson  
Asphaltum Co., Dragon, Utah.*

DEAR SIR:—In accordance with sec. 13 of the Coal and Hydro Carbon Mining Laws of the State of Utah of 1905, I herewith hand you my report of my official

visit of inspection to your Ginsonite Mine, at Dragon, Utah, on November 1st and 2nd.

I went through the mine and found it in a fairly good condition, with the exception of the mine being drp and dusty, the ventilation and timbering was good.

My suggestion would be for you to put in your water system as soon as it is possible for you to do so, as the mine is in a dangerous condition with the dry dust you have in the mine at present.

I will call your attention to sec. 10 of the Coal and Hydro Carbon Mining Laws of Utah, as to water system, whith reads as follows: Every owner, agent, manager, or lessee of mines within the State of Utah, shall provide and maintain a water system for the purpose of conducting water to the face of each and every working place, and throughout the entire open part of the mine, in sufficient quantities for sprinkling purposes to wet down the dust that shall arise and accumulate in and around the mine, provided that in mines or parts of mines where by reason of the natural wet condition, or the moisture derived from the introduction of steam into the air current, or both, such sprinkling may not be necessary. And it shall be the duty of the superintendent, mine-foreman and inspector to see to it that this is done.

I will also refer to sec. 16 which calls for your mine foreman to hold a certificate of competency which is required by law. I spoke to your mine foreman about the same and told him what to do, if you think he is the man you want to be inside foreman. I will also ask you to see your mine foreman and have him search the men for matches before going on shift, as they must not be allowed to carry matches in the mine.

The man who dumps the Gilsonite in the bin and the car should not be allowed to smoke while on duty. I was told that the man that did the dumping smoked several times during the day while on duty. It must be stopped, as there should be no fire within 200 feet of the dump, as you know that when a car of gilsonite is dumped into the bin it makes lots of dust, if you should have an explosion at the dump the smoke would



go into the mine and the men would have but little chance for their lives.

Do not think I am pushing you, as this is for your interest as well as the working men. Hoping you will see to this at once,

Yours truly,

GOMER THOMAS,

State Coal Mine Inspector.

#### FATAL ACCIDENTS IN HYDRO CARBON MINES DURING 1906.

April 18th. On this date, Otto Anesi, Silverton, Colo., Elmer Hopkins, Kanosh, Utah, single, W. H. Forman, Bluff, Utah, single, and B. L. Raorden, Winter Quarters, Utah, married, leaving a wife and five children.

The said men came to their death on April 18th, 1906, while employed in the Pariette Mine, and that the death of said men was caused by burning gas.

#### FINDINGS OF INQUEST JURY.

YATON, UTAH.

State of Utah,  
Duchesne Precinct.  
Wasatch County.

An inquest having been held at Pariette, 1906, before H. G. Clark, justice of the peace in Duchesne Precinct in said county, upon the bodies of Elmer Hopkins, Otto Anesi, W. H. Forman and B. L. Raorden there lying dead, by the jurors whose names are herewith subscribed, the said jurors upon their oaths do say—

That said men came to their death on April 18th 1906, while employed in the Pariette Mine and that the death of said men was caused by burning gas.

And we jury further find that the mine has been closed for the past twelve hours with no pumps running making it exceedingly dangerous to enter the mine at this time thereby preventing the jury making the personal investigation desired.

In witness whereof the jury have hereunto set their hands this nineteenth Day of April, One Thousand Nine Hundred and Six.

(Signed)

W. M. GENTRY,  
D. T. POWELL,  
E. M. JONES,  
Jurors.

H. G. CLARK,  
Justice of the Peace.

#### FATAL ACCIDENTS FOR THE COAL MINES DURING 1906.

June 9th, 1906. On this date, M. Imanaka, a Japanese, age 29 years, was fatally injured in Castle Gate Mine. Skull fractured at the base of brain, neck dislocated, scratched and bruised in various places over the body and limbs. He was apparently engaged undermining the coal at the face of his room when a large triangular piece of rock fell from the roof, knocking him down and doing him the above stated injury, and killing him instantly.

The coroner's jury returned the following verdict:—This Jury finds that this man come to his death by rock falling from the roof in the mine; cause of accident his own neglect.

(Signed.)

JOHN PERRY,  
J. E. BATCHELOR,  
GRIFF THOMAS.

October 22nd, 1906. On this date, Aurable Pasquale, age 30, Italian, miner, was instantly killed in No. 2 Mine Sunnyside. Pasquale was single and had been in the employ of the Company five years.

While he was loading a car at face of his working place, a stump on 6th left off 5th raise and in the act of lifting a shovel of coal, a wedge shaped piece of rock weighing something like a ton fell from roof, striking him on the head and killing him instantly.

November 14th, 1906. On this date, Antone Bende, age 39, a miner, was fatally injured in the Castle Gate Mine. Antone Bende was married and had been in the employ of the company three years. Injuries:—Skull

fractured right temple, scalp wound on top of head about five inches long, also various bruises on body and limbs.

Room had been driven up to limit and cross cutted through to next room, and were on their second skip, being about half way over when accident occurred. The place was examined on the morning of the accident and reported safe by the Fire Boss. The Mine Foreman was in this place the morning previous and found the place well timbered and safe. The driver, who was his partner and had been called out to drive, had brought 2 cars into the room about 1:10 p. o'clock, and Bende and his other partner immediately started to load, being between cars and face after about five minutes loading Bende called to his partner "Look out it (meaning the roof) is coming" his partner ran out at once and got away about 100 feet when the roof caved. Bende must have paused to listen as he was found only 10 feet from where he was loading.

#### COPY OF INQUEST.

*State of Utah, Castle Gate Precinct, County of Carbon.*

An inquest having been held this day of November 14th, 1906, on the body of Antonio Bende before Justice of the Peace Frank G. Stafford of Castle Gate Precinct of the aforesaid county. We the Jurors find after making diligent inquires and hearing all testimony that the said Antonio Bende came to his death by a sudden cave in of rock and coal.

We the Jurors with the evidence and testimony before us return a verdict of accidental death.

Jurors,

WM. FEATHERSTONE,  
ED. EDWARDS,  
J. E. BATCHELOR.

#### NON-FATAL AND SERIOUS ACCIDENTS FOR 1906.

March 14th, 1906. On this date, James O. Clark, a Tracklayer, was injured in the Wasatch Mine, at

Coalville, Utah. At time of accident Clark was back a car on the siding. Right leg above ankle joint squeezed between bumpers of two cars causing lab bruises of flesh and fracture of small bone.

July 14th, 1906. On this date, Fred Roberts, a miner, was injured in the Clear Creek Mine. Bruised lower part of body. He was loading a car and stepped behind the props to get some chunks of coal, as he did so a piece of rock fell on his body.

July 14th, 1906. On this date, J. L. Roper, a driver, was injured in the Castle Gate Mine. Injury to spine causing loss of sensation from waist down, also a gash on knee. Roper was taking in two cars along the 8th Level of the 9th Rise when the pin of the holdback chains came out allowing one side of the shaft to drop, scaring the mule which started to run. Roper evidently got excited and jumped off the cars at the mouth of the 8th Room onto a pile of props which he had put there earlier in the day. He rolled back against the cars and got hit in the back with one of the cars.

July 30th, 1906. On this date, F. R. Lundy, a driver, was injured in the Castle Gate Mine. At time of accident Lundy was coming down No. 6 room and ran into two other cars with his trip causing injuries to back and breast.

August 3rd, 1906. On this date, D. O. Barnes, a miner, was injured in the Sunnyside Mine No. 1. Big toe of left foot crushed. He was standing on a piece of coal by side of track and foot slipped off on track and car ran over big toe.

August 3rd, 1906. On this date, Thomas Wilson, a miner, was injured in the Winter Quarters Mine by a small piece of slate falling from the roof and striking him on the head, causing slight scalp wound.

July 25th, 1906. On this date, Thomas Phelps, a rope rider at No. 1, Bridge at Sunnyside, was injured. Index finger on left hand cut by rope. Rope worn and a piece of wire was sticking through rope, and while pulling rope down to couple on empties, he got his finger caught on the wire, causing slight cut.

July 26th, 1906. On this date, Rudolph Cramer, a miner in Sunnyside Mine No. 3, was injured. Slight injury to left leg just above ankle, account being struck with pick while mining.

July 30th, 1906. On this date, Joe Molinaro, a laborer at Sunnyside, was injured at the crusher. Left wrist bruised. While cleaning up slack a piece of pipe got caught in elevator and mashed his arm against elevator.

July 30th, 1906. On this date, Nick Knoff, a miner, was injured in No. 2 Mine at Sunnyside. Right knee bruised. Stumped his toe on a piece of coal, and struck his knee on a rail.

August 3rd, 1906. On this date, James Dale, a trapper, was injured in No. 1 Mine at Sunnyside. Dale was walking along entry when he stumbled and fell to the ground, striking his hand on a board from which there was a nail projecting that caught his hand.

August 4th, 1906. On this date, Cosino Yapelli, a miner, was injured in No. 1 Mine Sunnyside. Slight injury to eye, piece of coal got in left eye.

August 6th, 1906. On this date, Ed. Twiss, a driver, was injured at Sunnyside. Car jumped the track bruising his left leg.

September 28th, 1906. On this date Anthony Screener, a driver, was injured in the Sunnyside Mine No. 2, collar bone broken on right shoulder. Car jumped track and caught him between car and props.

September 29th, 1906. On this date Tony Tartoghi, a driver, was injured in the Sunnyside Mine No. 1, collar bone on left side broken. Car run off track at switch and caught him between car and coal.

#### NON-SERIOUS ACCIDENTS FOR 1906.

June 25, 1906. On this date George Callas, a motorman on a larry car at Castle Gate Coke Ovens. Callas was taking a loaded car of slack to dump in a coke oven when he claimed that the power went off and he was unable to hold his car which ran off the end

of the ovens. Callas sprained his ankle, which was caused by his jumping from the top of the ovens.

June 28th, 1906. On this date Steve Gekovich, a driver in the Sunnyside Mine No. 1, was injured. While coming over parting. pin pulled out and let gun down on foot, causing slight injury.

June 30th, 1906. On this date, Mike Rice, a miner in the Sunnyside mine No. 1, was injured, right arm bruised. Car too full, and while trying to push coal up on car mule started and caught injured between coal on car and roof.

July 8th, 1906. On this date Oscar Robertson, a miner, was injured in Sunnyside mine No. 1, right foot bruised. A chunk of coal fell from face of coal and rolled on foot, causing slight bruise.

July 19th, 1906. On this date Sam Preston, a driver, was injured in the Sunnyside mine No. 1, right elbow bruised. While riding mule to mine a woman came out of a house and wass haking a rug, and scared the mule which threw driver off and hurt his right elbow.

August 9th, 1906. On this date Edward Neilson, a driver, at Winter Quarters Mine, was injured. Entire end of ring finger from second joint smashed. At place of accident the track is quite steep, and to make the car secure that it could not run away the miners used a piece of rock about four feet long as a brace, placed in front of the car and against a tie in the track. Neilson in removing this rock after he had hitched his horse to the car, got hold of the next to the car and the horse started up before the rock was out of the way and caught his finger between the car and the rock.



# Notes on the Weber River Coal Field, Utah.

BY JOSEPH A. TAFF.

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## PRELIMINARY STATEMENT.

For many years coal has been worked with varying profit at a number of localities in Weber River valley and its tributaries, Chalk and Grass creeks, in the vicinity of Coalville, Summit County, Utah. Summit County is in northern Utah, and adjoins southwestern Wyoming.

The Weber River coal field is situated east of the Wasatch Mountain range. The river collects its waters chiefly from the northwestern slopes of the Uintah range, flows northward across Summit County, and thence westward through the Wasatch range to Great Salt Lake west of Ogden.

Facilities of transportation for the coal of the Weber field are afforded by the Union Pacific railroad. The main line of this road follows the valley of Weber river from Ogden to Echo, where it turns toward the north-east up Echo canyon. From Echo, the Park City branch of the Union Pacific continues up the Weber valley through Coalville. From the Park City branch spurs have been constructed to the Wasatch and Grass Valley mines, 2 and 7 miles respectively, northeast of Coalville. The Dexter mine, the only other one now in operation, is situated one mile southeast of Coalville.

The rocks at Coalville were examined and the occurrence of coal noted by F. B. Meek and E. Engelmann in 1859 while attached to the exploring party in command of Captain J. S. Simpson, U. S. army. Meek revisited the field in 1872, and it was later studied by



members of the Fortieth Parallel Survey; also by C. A. Wane in 1877. Beginning with the Meek and Englemann report in 1880, the rocks were classed in various groups of the Cretaceous. T. W. Stanton has surveyed the Coalville section, besides various others in the western Cretaceous areas. In a comparative study of the Colorado group of the Cretaceous, the coal-bearing rocks of the Weber River valley are included by Stanton in the lower or Benton division of the Colorado group.

The Weber River coal strata are of the same age as a part of those of the Kemmerer field in southwestern Wyoming, recently surveyed by A. C. Veatch. The exact stratigraphic correlation of the coal beds in the two fields, however, has not been determined.

#### STREACE FEATURES.

The larger physiographic features of the country in the region of Coalville are not dependent for their expression on the lithologic character of the formations. The main valleys and ridges cut indiscriminately across the hard and soft rocks. Weber river has a course west of north and Chalk creek runs nearly west, while the strike of the rocks is generally northeast and southwest. Within a range of six miles from Coalville the surface rises 3,500 feet toward the southwest. Toward the east and northwest it rises to elevations of 2,000 and 2,500 feet above the valley of Weber river, which is here 5,600 feet above the sea.

The thicker and harder sandstones of the coal-bearing sections, Nos. 1, 4 and 6, given below, and another referred to near the top of the Cretaceous system in this field, make distinctive ridges and benches in the lower slopes of the valleys of Weber river and Chalk and Grass creeks. The dip of the rocks is towards the northwest and the outcropping edges of these sandstones make precipitous southeastward-facing cliffs. The lowest sandstone, No. 1, of the section, is less prominent in its topographic effects than the others, yet is a distinct marker for the position of the most valuable coal bed in the field, which lies immediately beneath it.

## STRATIGRAPHY.

The rock formations consist of shale, sandstone, and conglomerate, with occasional strata of limestone and three or more beds of coal. The numerous faults that intersect the rocks and the spaces of concealed strata in the valleys prevent the measurement of an accurate section in the vicinity of Coalville except by a detailed survey and a careful study of the fossils. Little note was taken of the rocks below the lowest known workable coal now being developed at the Wasatch mine, two miles northeast of Coalville. Stanton who has studied the section at Coalville, reports that below this coal are 500 to 600 feet of interstratified shale and sandstone. The following general estimated section, based in part on Stanton's measurements, in ascending order, will give some idea of the lithologic succession and positions of the coal beds.

GENERAL SECTION OF COAL-BEARING ROCKS IN WEBER  
RIVER FIELD:

	Feet.
1. Wasatch coal, being mined at Wasatch and Grass Valley mines.....	9- 14
2. Sandstone, thick-bedded, light gray .....	40
This sandstone is the roof of coal in Wasatch and Grass Valley mines.	
3. Blue-clay marl (Grass Valley).....	400-765
Crops in valleys chiefly and is usually only partially exposed. Coal occurs in the upper part or probably at the top of this shale. It is reported by Mr. Samuel Clark, superintendent of the Wasatch mine, to be a double seam, each bench being 3 to 4 feet and separated by 2 to 3 feet of shale. The upper coal is succeeded by sandstone.	
4. Sandstone and conglomerate.....	100-300
In Grass valley it appears thicker than at Coalville, and is separated into two members by shaly strata.	
5. Shale and thin sandstone... ..	400-500

A bed of shell limestone occurs in upper part and a thin bed of coal is reported to occur near the same position in the section. A coal in the upper part of this group of strata, one mined two miles southwest of Coalville, is reported by Mr. T. J. Lewis, manager of the Wasatch mine, to consist of two beds, each 2 to 3 feet thick, separated by shale varying in thickness from  $1\frac{1}{2}$  to 2 feet.

6. Massive light yellow sandstone and conglomerate ..... 100-300

Above these sandstones and conglomerates there is shale, probably 1,500 feet thick, which is in turn followed by brown and gray sandstone, with minor shale beds 1,300 to 1,500 feet thick, to the base of the great Wasatch conglomerate of presumably Tertiary age.

#### STRUCTURE.

The coal-bearing rocks in the vicinity of Coalville on the north and west are tilted toward the northwest at angles varying generally between  $16^{\circ}$  and  $20^{\circ}$ . The rocks also have been broken and disturbed by two systems of faults. One is a system of strike faults bearing northeast and southwest, almost with the strike of the rocks; the other is a system of dip faults at right angles to the first. A fault belonging to the first-mentioned system may be seen northeast of Coalville. It extends from the northern boundary of the city northeastward across the SE.  $\frac{1}{4}$  sec. 4 and the NW.  $\frac{1}{4}$  sec. 3, T. 2 N., R. 5 E. The abandoned coal mine in the SE.  $\frac{1}{4}$  sec. 4 is located near this fault. The rocks on the southeast side of the fault have been dropped with respect to those on the opposite side. The massive sandstone in the ridge lying across sec. 3 above and northwest of the Wasatch mine has been thrown down until it appears to extend 800 feet beneath its counterpart in the prominent ridge one-half mile to the northwest, extending across sec. 4. A dip fault cuts the rocks crossing near the southwest corner of

sec. 3. Another fault of this system occurs nearly 3,000 feet northeast of the Wasatch mine. It crosses the township line near the center of the north side of sec. 3, T. 2 N., R. 5. E. This fault has limited operations in the Wasatch mine toward the north. Minor faulting and belts of fractured strata are found frequently in the mines.

In Dexter Hollow and at the Dexter mine, 1 mile southeast of Coalville, the rocks dip  $16^{\circ}$  SE. Between Dexter Hollow and Spring Canyon, 1 and 2 miles respectively south-southeast of Coalville, the dips are eastward. As Spring Canyon is ascended eastward 2 miles from Weber River valley, the rocks are seen to dip successively northward and then northwestward. These observations indicate that a basin-like fold bears eastward from Weber River valley in the central part of T. 2 N., R. 5 E. Between this fold and the northwesterly dipping rocks at Coalville, the structure is anticlinal and the rocks are probably faulted. Exposures of the rocks are insufficient, however, to reveal the character of the structure.

#### COAL.

There are certainly three and probably four coal beds mined or prospected in the region of Coalville. These coals will be considered in the order of stratigraphic succession and as it happens, at the same time in the order of economic importance.

*Wasatch coal.*—The first of these coals may be called the Wasatch coal, from the Wasatch mine, now in operation two miles northeast of Coalville. The coal here has been removed from an area of 4,000 feet on the strike by 750 feet in the direction of the dip. The coal is massive and varies in thickness between 9 and 14 feet. A sandstone bed 40 feet thick forms the roof. The floor is a dense clay, and is underlain by a bed of bony coal, the thickness of which has not been determined. The coal mines in block, is moderately hard and appears to be a fair grade of the bituminous variety. In the proximity of faults and zones of shearing that are of common occurrence the coal has suffered considerable crushing. In such places it is

rendered weak and considerable slack and soft coal is produced.

The same coal is mined on Grass Creek 7 miles northeast of Coalville in sec. 18, T. 3 N., R. 6 E. The Grass Creek coal is the same bed as that of the Wasatch mine. Massive sandstone 40 feet deep overlies it. The coal is usually 8 feet thick, but swells locally to 12 feet. In this mine, as in the Wasatch, the coal is much jointed and broken by faults. Water enters the mine freely through the joints and fault fissures, requiring constant pumping. Because of excessive water the pillars are being drawn in the mine preparatory to moving operations one-fourth mile to the southwest.

The outcrop of the same coal follows Grass Creek, and has been mined at a number of localities down the valley, from section 18 T. 3 N., R. 6 E., to section 27 T. 3 N., R. 5 E., where it is interrupted by a dip fault which displaces the outcrop of the coal toward the southeast. The coal has been mined at seven or more different places along Grass Valley within a distance of 4 miles below the Grass Valley mine, but all have been abandoned. The Union Pacific Railroad was the chief operator, but it is reported to have abandoned the work here in favor of better property in the Wyoming field. The Wasatch coal was mined also in the town of Coalville and for a time a mile northwest of town near the strike fault, but these operations have been abandoned.

*Dexter coal.*—A coal bed is being developed by the Dexter Brothers, one mile southeast of Coalville, in the SE  $\frac{1}{4}$  sec. 16, T. 2 N., R. 5 E. It is presumed by some that this bed is the same as the Wasatch coal, but the identity of the two beds is not proved by surface indications. The section at the Dexter mine seems to be as follows:

SECTION OF DEXTER MINE ONE MILE SOUTHEAST OF COAL-  
VILLE, UTAH.

	Feet.
Sandstone, full thickness not determined	
Shales, roof of coal, reported to contain fossil shells	4
Coal, upper bed.....	7
Shale.....	4
Coal, lower bed.....	7
Clay shale.....	4

The upper bench of coal is the only one now worked. The section below this bench is reported by Dexter Brothers to have been proved by excavations beneath the present workings. The coal in the Dexter mine is clear of shaly impurities or tangible sulphur compounds, and the quality appears to be equal to that of the Wasatch coal. The Dexter coal has been mined to a small extent in several places in the hollow below the Dexter mine. The irregularities in the position of the outcrops, as indicated by the abandoned mines and the difficulties said to have been encountered in mining shows that the strata have suffered considerable displacement by faulting.

*Other coals.*—A double coal bed occurs nearly 400 feet above the Wasatch coal, but is, at the present time of little economic importance. The coal in each of the two benches is reliably reported to have been mined a mile north of Coalville. Each bench is 3 to 4 feet thick, separated by a shale bed two to three feet thick. A coal in the stratigraphic position of this bed has been prospected in the north slopes of Grass Creek Valley near the south side of sec. 3, T. 3 N., R. 5 E. A similar double seam of coal occurs stratigraphically about 700 feet higher and 1,100 to 1,200 feet above the Wasatch coal. In the early development of the country this coal was mined 2 miles west of Coalville, in sec. 19, T. 2 N., R. 5 E. It is reliably reported that each of the beds is  $1\frac{1}{2}$  to 3 feet thick and separated by  $2\frac{1}{2}$  to 2 feet of shale. A coal in the same stratigraphic position was mined also at one time in the NW  $\frac{1}{4}$  section 4, T. 2 N., R. 5 E.

*Qualities of coal.*—The Wasatch, Grass Valley, and Dexter mines now in operation in the vicinity of Coal-

ville yield a product that has the physical properties of a fair grade bituminous coal. It is a black block coal of medium hardness. A sample of the Wasatch coal was analyzed by Mr. F. M. Stanton, chemist, U. S. Geological Survey coal-testing plant, St. Louis, Mo. An analysis of the coal at Winterquarters, one of the most extensive mines in the Book Cliffs coal field, was made also. The Book Cliffs field is one of the most extensive in the State, and the coal has been successfully used both for steaming and domestic purposes and the production of coke.

COMPARATIVE ANALYSES OF COAL FROM COALVILLE AND WINTERQUARTERS.

	Coal- ville.	Winter- quarters.
Moisture .....	13.92	8.10
Volatile matter.....	37.96	40.21
Fixed Carbon.....	43.67	45.91
Ash .....	4.45	5.78
Sulphur.....	1.03	.86
	101.03	100.86

The percentage of water in the Coalville coal approaches that often found in the black lignites, the highest grade of so-called lignites. Owing to the abundant mine water occurring in the mines near Coalville and the scattered character of much of the coal, it is possible that a small amount of superficial water was carried in the sample at the time the analysis was made. The physical characteristics, its behavior on exposure in the atmosphere, and its utilization show it to be a bituminous coal well adapted to domestic uses.

*Conclusion.* The coals of the Weber River field, other than the Wasatch and Dexter beds, are of little immediate economic value. The interstratified shales, together with the difficulties experienced in mining incident to water and broken strata, have prevented these beds from competing with the Wasatch and Dexter coals. The Wasatch and Dexter beds are ample in thickness for successful working, and the quality of

the product compares favorably with the better grades of bituminous coals of the Rocky Mountain region. The difficulties in the way of large exploitation of these coals are the amount of mine water and the fractured nature of the beds, resulting in the production of considerable quantities of slack.



# Book Cliffs Coal Field, Utah, West of Green River.

BY JOSEPH A. TAFF.

## LOCATION AND EXTENT.

The Book Cliffs coal field is in central and eastern Utah. Its south end lies in eastern Sevier County, near the center of the State. From this locality the field bears north-northeast to Price River near Castle Gate, in western Carbon County. From Price River it curves to the east for 20 miles and then bears to the southeast, crossing Green River north of the Rio Grande Western Railway. Beyond Green River it turns to the east and northeast, passing into Grand County and thence into Colorado. Only that part of the field limited to Sevier, northwestern Emery, and Carbon counties has been surveyed and hence is included in this report.

The Book Cliffs coal field is relatively narrow, comprising the eastern escarpment of the Wasatch Plateau through Sevier, Emery, and western Carbon counties and the southern face of the Book Cliffs from Castle Gate eastward to the Colorado line (see Pl. IX). The lateral extent of the field is governed by the length and depth of the canyons that have been cut into these escarpments. A local variation in width may be noted in a north-south swell of the strata situated near the eastern rim of the Wasatch Plateau in extreme western Carbon and northwestern Emery counties. The mining towns of Clear Creek and Winter Quarters are on the northward pitch of this swell. The erosion of Pleasant Valley and the upper part of Huntington Creek Valley have exposed the coals in this uplift. With the exception of Pleasant Valley the canyons cutting the coal-bearing rocks descend from the plateau out through the faces of the escarpments into the rolling plain of Castle Valley.

U.S.G.





The coal-bearing strata descend gradually inward beneath the plateaus from the middle slopes of the front cliffs and pass beneath the drainage line of the canyons and gulches, as a rule within a few miles of the front. Exceptions may be noted in the case of Price River, Huntington Creek, and Gordon, Cottonwood, Ferron, and Muddy Creek canyons, where the coal outcrops extend from 6 to 20 miles into the plateaus. In such instances the field of available coal is considerably increased.

#### SURFACE FEATURES.

The region of the Book Cliffs coal field is an open country, and from an eminence near the junction of the Wasatch escarpment and Book Cliffs north of Price the observer may comprehend the general physical features of the whole land at a single sweeping view. The desert plain of Castle Valley stretches away to the limit of vision toward the southwest and southeast. Between the arms of the valley toward the south the broad, rugged surface of the San Rafael Swell rises in the distance. Along the borders of Castle Valley on the north and west terraced cliffs rise to heights of 1,500 to 2,000 feet. These form the escarpments of the Book Cliffs and the Wasatch Plateau. Between Castle Gate and Sunnyside the Book Cliffs Plateau slopes gradually to the north, in agreement with the dip of the rocks to the base of the Roan Cliffs.

Long, tongue-like, flat table-lands and mesas 100 to 200 feet high, capped by the thick sheet of bowlder wash, the remnants of the old valley floor, extend from the bases of the Book Cliffs and Wasatch escarpments out into Castle Valley. At the borders of these table-lands and mesas are fantastically carved terraces and columns. The floor of Castle Valley and of the lower slopes of the escarpments at its borders is a friable blue clay marl. The larger streams that flow from the plateaus have worn through the bowlder layer forming flat box valleys in the soft clay marl. The smaller drainage channels on cutting through the bowlder and gravel surface sink into the marl, producing an ex-

tremely rough, boulder-strewn, badlands type of topography. Before this erosion occurred the old valley floor stood high above its present level and was covered with a thick mantle of boulders and gravel, which was spread over the plain for several miles from the escarpments.

Beds of sandstone that are locally variable in thickness occur in the shale of Castle Valley 500 to 700 feet below the top of the formation. At the base of the Book Cliffs they are thin and shaly and have little effect on the topography. From Price River westward they increase in thickness rapidly, aggregating more than 100 feet on Gordon Creek. Toward the south they thin to mere bands on reaching Huntington Valley, but still farther south they become thicker, reaching 200 to 250 feet on Muddy and Ivie creeks at the south end of the coal field. These sandstones, occurring as they do in the midst of soft shales, make peculiar and striking features in the topography, and from them Castle Valley has acquired its name. Box canyons, many of them impassable, fluted and terraced cliffs, castellated headlands, and perpendicular towers mark their occurrence. Even where the sandstone is thin it serves as a protecting cap to the buttes, and in many places the underlying clay marl stands in perpendicular columnar walls 100 feet or more in height. The soft layers in the marl weather out in parallel bands in the cliffs, leaving the hard layers as projecting ledges. Thus the cliffs simulate rows of gigantic books.

There is a gradual rise of the surface from Castle Valley toward the San Rafael Swell. The rocks beneath the Castle Valley marl consist of pinkish sandstone several hundred feet thick. This sandstone makes the Red Plateau and the western rim of the Swell. In turn, it is underlain by friable arenaceous shale. On cutting through this sandstone the streams have descended rapidly in the soft underlying marl, creating a strikingly rugged and almost impassable country, which extends diagonally across Emery County from the Red Plateau toward the southwest. The main escarpment produced by these sandstones faces east and south toward the center of the Swell. Nu-

merous channels draining into San Rafael River and Muddy Creek have cut by headwater sapping into this escarpment, reproducing in a measure the topography of the Book Cliffs and the Wasatch Plateau escarpments, with even more picturesque effect. Perpendicular cliffs mark the escarpment faces and deep box canyons extend back into the plateau. On the divides and projecting points between the drainage lines near the escarpments there are high pinnacles and rugged towers of pinkish sandstone.

#### STRATIGRAPHY.

The survey of the Book Cliffs field during the past season has special reference only to the occurrence of coal. Such work as could be devoted to formations contiguous to the coal-bearing rocks was in the nature of a reconnoissance.

The rocks are naturally arranged in thick groups of strata. In each group either sandstone or shale greatly predominates. They contain scant fossil remains, and sufficient information regarding their age has not been obtained to correlate them with similar well-known beds in other parts of the country. The entire section is without doubt cretaceous, and the principal coal-bearing strata are within the Laramie formation. Further study of the section and detailed areal mapping will doubtless show that the principal groups of strata may be subdivided into smaller units of more uniform lithologic character. For these reasons the formation will not be named, being described by reference to their occurrence.

*Shale of the San Rafael Swell.*—The lowest formation was noted in a reconnoissance down Muddy Creek southeast of Emery. Only the upper 250 or 300 feet of the formation was seen. It consists of bluish argillaceous shale. From the cliffs of overlying sandstone it could be seen that deposits of the same character make the desert 12 to 15 miles out on the western slopes of San Rafael Swell.

*Sandstone of the Red Plateau.*—Reddish, yellow, and brown sandstone overlies the blue shale of the San Rafael Swell. On Muddy Creek southeast of Emery,

where the section was measured, the formation consists of sandstone, shale, and coal, in the following order, from the top down:

## SECTION ON MUDDY CREEK.

	Ft.	in.
Base of Castle Valley shale.		
1. Brownish and yellow sandstone, with some shale interstratified.....	25	
2. Thin seam of coal.		
3. Shaly sandstone.....	10	
4. Shale .....	5	
5. Coal.. ..	5	
6. Shale and thin coal.....	1	6
7. Yellow, brown, and pinkish sandstone ..	125	to 2
8. Bony coal, separated into two nearly equal benches by variable bands of bony shale 4 to 14 inches in thickness . . . . .	4	9
9. Yellowish sandstone .. .. .	15	to 7 2
10. Bituminous shale and coal, the coal occurring in two bands of nearly equal thickness .. . . .	3	
11. Yellow, somewhat friable sandstone, with thin carbonaceous shale in the central part.....	225	

This sandstone formation makes the bold, rugged escarpment and the Red Plateau, bounding the San Rafael Swell on the northwest side and the north end, respectively. The escarpment grows higher and more rugged northward from Muddy Creek, and for this reason it is believed that the formation becomes thicker in the same direction. The coal, which is of little economic importance, is known to occur only to the east and southeast of Emery.

*Shale of Castle Valley.*—A blue-clay shale or marl 1,000 to 1,500 feet thick overlies the sandstone of the Red Plateau. Castle Valley is eroded in this shale, and the sandstone lentils in the upper part produce the characteristic topographic features from which the valley derived its name. The lower half of the formation lies in a gently undulating desert plain, and the

rocks usually are not exposed. In the coal investigation there was no occasion to examine the lower part of the formation. The upper part, except the sandstone lentils, is an even-textured blue marl that is highly impregnated with alkaline salts. Even on rapidly weathering surfaces the white salts exude in many places. In poorly drained irrigated districts, where the soil is thin, alkaline salts are so abundant as to destroy vegetation. The sandstone lentils that occur 500 to 700 feet below the top are made up of beds of varying purity and thickness. From the vicinity of Sunnyside westward to Price River they are represented by thin shaly sandstone that is scarcely perceptible, having very slight effect on the topography. Westward from Price River the beds increase in thickness, aggregating more than 100 feet in the valley of Gordon Creek. Toward the south the beds thin out to mere bands in a distance of 13 miles. Southward from Huntington they increase again, reaching nearly 200 feet on Quitchupah and Ivie creeks, at the south end of the coal field. The sandstones comprising the lentils include many shaly sandstone and shale beds.

The Castle Valley shale was examined by T. W. Stanton in a brief reconnaissance trip near the Rio Grande Western Railway about 50 miles southeast of Castle Gate. The collections of fossils that he was able to make showed that the upper part of the Castle Vally shale belongs to the Montana group of the Cretaceous and that the parting between this group and the succeeding Laramie coincides approximately with the boundary between this shale and the overlying sandstone of the Book Cliffs.

*Laramie Formation.*—The Laramie formation consists of sandstone, shale, and coal in alternate succession. The sandstones occur in beds ranging from a few feet to nearly 500 feet in thickness. For convenience of description the Laramie formation may be separated into three parts—(1) that below the coal, consisting of sandstone and shale in almost equal proportions; (2) coal-bearing series of sandstone, shale, and coal alternately stratified; (3) upper beds, consisting almost entirely of sandstone.

1. The rocks below the coal consist of two thick



yellowish to drab and light-gray sandstones separated by a mass of shale and thin sandstone. The lower sandstone varies in composition as well as thickness.

In the Wasatch Plateau it is 80 feet or more thick and generally a massive magnesian sandstone. In the Book Cliffs it is thinner and more shaly. It is always present, however, and is exposed in steep bluffs and often impassable cliffs. This bed invariably overlies the marly shale formation of Castle Valley. Above the lower sandstone is a series of shale and sandstone beds. The sandstone rarely reaches a thickness of 20 feet, and the whole aggregates 60 to 100 feet. These beds are often talus covered. Where exposed they make rather steep terraced slopes, and the sandstone ledges project in benches or low bluffs. Beneath the lowest productive coal bed in the Book Cliffs field there is a continuous sandstone 80 to 100 feet thick. It is light yellow or drab in color except the upper 10 to 20 feet, which is usually white. In the eastern and southern slopes of the Book Cliffs and Wasatch escarpments the sandstone stands out in steep bluffs and often impassable cliffs. In the northern and western slopes of the canyons entering the escarpments it is often broken down, but is rarely concealed by talus. This sandstone bed is a most valuable guide in searching for coal in this region, as it occurs just below the lowest workable coal in the Book Cliffs field. It can not only be traced readily from point to point of the cliffs, but can be recognized at a range of several miles by its characteristic features and position.

2. The coal-bearing rocks consist of nearly equal portions of sandstone and shale, with several beds of coal. With the exception of some heavy beds in the lower part, the series consists of relatively thin strata that are usually more or less concealed by talus. The lowest coal bed where it has been seen fully exposed in mines and prospects varies between 3 and 20 feet in thickness. It rests often directly upon the massive sandstone at the top of the series below the coal. In the localities of its thinner occurrence blue to black shales, usually containing thin coals, occur above it. Where the coal bed is thickest it commonly has a sandstone roof.

Pinkish to yellow sandstone, associated with shale,

overlies the lowest coal. These deposits, 30 to 50 feet thick, usually make steep slopes between cliffs of sandstone in the escarpments and canyons that face toward the south and east. In sec. 16, T. 13 S., R. 10 E., north of Price, they are succeeded by a second coal bed 8 feet 6 inches thick.

A massive sandstone overlies this second coal bed. It is yellow to pink in color, except the upper 15 to 20 feet, which is almost white. This sandstone, like that underlying the lowest coal, extends throughout the Book Cliffs field. Its thickness is rarely below 50 feet and sometimes approaches nearly 100 feet.

A third coal horizon occurs immediately above this sandstone in sec. 16, T. 13 S., R. 10 E., where the rocks are naturally displayed for inspection. Fifteen feet of coal were exposed. In Coal Canyon, in T. 13 S., R. 11 E., a coal in this position is 8 feet thick. A coal having approximately the same stratigraphic position in Huntington Canyon, in sec. 24, T. 16 S., R. 7 E., is 8 feet thick. Above this third coal horizon there is a uniform succession of sandstone, shale, and coal, upward for 600 to 800 feet to the top of what is now recognized as the coal-bearing series. It is not usual that the individual sandstone beds exceed 10 feet in thickness. Shales and sandy shales are usually concealed by talus. It is estimated that the aggregate thickness of the shaly beds is nearly equal to that of the sandstones. Several coal beds, some of workable thickness, occur in this series of sandstones and shales. In the Book Cliffs north of Price, between Bull and Helper canyons, one bed occurs 50 feet and another 150 feet above the third coal horizon. In Coal Canyon six coal beds have been exposed in a section of rock 360 feet thick. The uppermost one, 4 feet 11 inches thick and of excellent quality, appears to be above the third coal horizon. In Huntington Canyon and in other places in the Wasatch Plateau coals of workable thickness are known to occur in the upper part of the coal-bearing series, but little attention has been paid to them where coals 4 to 20 feet thick occur lower in the section and are more accessible.

3. The coal-bearing series of shale, sandstone, and coal is succeeded by a formation of light-yellow sandstone that continues upward to the base of the Tertiary

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deposits in the crest of the Book Cliffs Plateau. Thin coal seams have been seen at a few places in the lower part of this section and some shale is interbedded with the sandstone in the upper part. The central 500 to 700 feet of this sandstone series make bold cliffs toward the top of the Book Cliffs and Wasatch escarpments. In the Book Bluffs the sandstone is estimated to be not less than 1,000 feet thick. Toward the west it either becomes thinner or is in part concealed by the overlap of Tertiary strata.

#### STRUCTURE.

That part of the Book Cliffs coal field west of Green River lies on the outer rim, to the north and west, of the broad upward fold known as the San Rafael Swell. The Book Cliffs are on the northward pitching end of this fold and the rocks dip about 5 degrees. Near the junction of the Book Cliffs and the eastern escarpment of the Wasatch Plateau, at the west side of Price River Valley, the strike of the rocks turns toward the south. Throughout the eastern escarpment of the Wasatch Plateau, from Price River to the south end of the field in eastern Sevier County, the rocks are almost flat. The dips are usually toward the west and rarely exceed 2 degrees.

*Folds.*—Huntington Canyon and Pleasant Valley cut deeply into the northeastern part of the Wasatch Plateau, exposing the coals and revealing a slight upward flexure of the rocks. The strata have been broadly though slightly warped. The center of this swell is situated near the source of Huntington Canyon and Pleasant Valley, in western Carbon and northwestern Emery counties. The swell is so low that the westward inclination of the strata due to the San Rafael uplift is succeeded by a horizontal position or one slightly inclined toward the east. The rocks are inclined at a lower grade southward down Huntington Canyon. The dips of the rocks, however, are less than the grade of the stream. The inclination of the strata is very low also toward the west. The dip is very slight toward the north from the head of Pleasant Valley to Scofield. From Scofield north-

eastward, however, the inclination gradually increases to about 5 degrees in the vicinity of Colton.

*Faults.*—A series of parallel normal faults, trending in a north-south direction, were noted toward the head of Pleasant Valley; also in Huntington Canyon in the eastern part of T. 16 S., R. 7 E. The fault planes are nearly vertical and the throws or displacements vary from a few feet to nearly 100 feet. Coal prospectors report that greater faults occur on the west side of Pleasant Valley above Winter Quarters, but the report was not verified. A few faults of local extent bearing east and west were noted in the Winter Quarters mine, and associated with them are parallel thin igneous dikes that locally coke the coal. Another group of normal faults bearing north and south cut the escarpment of the Wasatch Plateau west of Ferron and Emery. In places the faulting is in a single plane, while in others it is compound, resulting in a series of steps or zone of shearing. The block or band of faulted strata west of Ferron and Emery varies from  $1\frac{1}{2}$  to 3 miles in width. The largest faults here are on the sides of the block, and the country between them has been depressed downward nearly 300 feet. The fault scarps facing the depressed block at the north side of Ferron Canyon are very pronounced. Conglomerate and shale of supposed Tertiary age occur on this downthrown block at lower elevations than the Laramie sandstone on either side. Several intermediate faults extending parallel to those on the side deform the down thrown block. Some of these minor fault blocks are tilted so that the beds dip as high as 20 degrees.

#### COALS.

The workable coal beds that have been mined or prospected to any important extent are found in the lower 250 feet of the coal-bearing strata described above. These coals are associated with prominent sandstone beds that can be recognized with ease and assurance by the prospector. They crop out in the lower cliffs and in the more accessible parts of the canyons and valleys.

*Quality of the Coal.*—The workable coals in the Book Cliffs field, with a few exceptions in the thinner beds, have the same physical characteristics, though the beds range in thickness from 4 to 20 feet and in a few instances more than 20 feet. The coal is usually free from shaly impurities and is massive. So pronounced is the massive nature where the coal is fresh that seams or lines indicating stratification are scarcely discernible. It mines in irregular blocks, often of large size. A bed 15 to 20 feet thick is inclined to spall in large irregular slabs several feet in extent across the bedding. The coal is not usually affected nor does it slack to any appreciable extent on exposure to weathering agents. It is black and for the most part has a bright luster. It usually contains small, irregular inclusions of a yellowish, brittle, resin-like bituminous substance scattered here and there that yields an asphaltic odor on ignition. The following proximate chemical analyses give a fair idea of the composition of the coals. The samples for analysis were collected from the several beds in the lower part of the coal-bearing section and from localities scattered between Huntington Canyon and the Wasatch Plateau and Horse Canyon, a point 60 miles distant in the Book Cliffs southeast of Sunnyside. The method of selecting samples of coal for analyses is as follows: A clean surface of the whole bed at the face of the working is selected, or a section of about 6 inches in width is made clean by removing the surface. Then a channel 3 to 4 inches in width and of even depth is cut down the cleaned surface, so that an equal amount of coal is obtained for each unit of a section. This coal so removed is placed on a clean surface and immediately broken to lumps half an inch and less in diameter and thoroughly mixed. The sample is then quartered opposite quarters being taken and remixed. The quartering, selecting and mixing process is continued until the sample is reduced to about 1 quart, which is placed in a galvanized-iron can, sealed, and shipped to the laboratory.

The Book Cliffs coals are clearly within the bituminous grade, and are remarkably uniform in composition. The sulphur content is also uniform and low, the average being a little above one-half of one per cent.

PROXIMATE ANALYSES OF COALS FROM THE BOOK  
CLIFFS AND FIELD, UTAH.\*

No.	Location	Moisture	Volatile matter	Fixed Carbon	Ash	Sulphur	Loss of Moisture on Air Drying
1	Horse Canyon, sec. 4 (?), T. 16 S., R. 14 E. ....	4.76	38.16	52.09	4.99	0.74	1.00
	Upper bed, No. 1 mine Sunnyside. ....	3.37	38.04	52.75	5.84	.80	1.30
3	Average of crushed coal, prepared for coking, from all mines, Sunnyside. ....	3.43	37.72	51.68	7.17	.78	1.50
4	Dugout Canyon, sec. 23, T. 13 S., R. 12 E. ....	4.98	38.20	52.94	3.88	.54	2.40
5	Bean prospect, Coal Creek Canyon, sec. 10, T. 13 S., R. 11 E. ....	4.09	38.06	52.59	5.26	.48	1.10
6	Gilson prospect, Coal Creek Canyon, sec. 3, T. 13 S., R. 11 E. ....	5.42	36.32	52.16	6.10	.54	1.00
7	Western part of Castle Gate mine. ....	4.72	39.13	48.45	7.70	.49	1.30
8	Eastern part of Castle Gate mine. ....	6.13	40.07	45.45	8.35	.56	3.50
9	No. 1 mine, Winter Quarters Clear Creek mine, Clear Creek	8.10	40.21	45.91	5.73	.86	3.90
10	Huntington Canyon, Bear Gulch prospect, NE. ¼ sec. 11, T. 14 S., R. 6 E. ....	7.02	41.89	45.80	5.29	.57	3.10
11		5.19	43.89	46.91	4.01	.31	2.30
12	Huntington Canyon, near center of S¼ sec. 24, T. 16 S., R. 7 E. ....	6.04	38.96	48.40	6.60	.83	2.90
13	Larson Brothers' mine, sec. 2, T. 15 S., R. 6 E. ....	8.46	41.17	46.09	4.28	.48	3.50
14	Emery coal mine, † sec. 2, T. 23 S., R. 6 E. ....	5.11	36.71	50.42	7.76	2.06	.80

\* These analyses were made by the United States Geological Survey coal-testing plant at St. Louis, F. M. Stanton, analyst.

† The Emery coal is in the sandstone of the Red Plateau, 1,500 feet or more stratigraphically below the Book Cliffs coals.

#### DESCRIPTIONS OF THE COAL BEDS.

*Horse Canyon.*—A coal bed is exposed in Sec. 4, T. 16 S., R. 14 E., near the base of the coal-bearing series. The bed is 14 feet 11 inches thick and is being opened for development. The coal is clean and massive. The floor is a massive sandstone. The roof of sandstone and shale 4 feet thick is succeeded by 2 feet of coal. The same bed was reported to be of equal thickness at prospects in Secs. 3 and 9 of the same township.

*Sunnyside Coals.*—Two coal beds are mined by the Utah Fuel Company at Sunnyside near the mouth of Whitmore Canyon, in Sec. 32, T. 14 S., R. 14 E., and Sec. 5, T. 15 S., R. 14 E. These coal beds are near the base of the coal-bearing series. The lower coal

ranges from 5 feet 3 inches to 6 feet 5 inches in thickness, while the upper bed, 30 feet above, averages about 5 feet 10 inches. Between the two beds are 30 feet of shale, sandstone and thin coal. The lower Sunnyside coal contains a few thin and locally bony lentils. Its luster is rather dull and it is classed by the miner as "dead" coal. The upper bed is clean and bright. It yields considerable gas on mining and is referred to as a "live" coal. Two mines are in operation here. Both beds are worked from No 1 mine, while No. 2 mine is confined to the lower. All of the coal is run to a single tippie and is crushed and the entire product coked, the larger part in the coking plant at Sunnyside, the remainder being taken to the ovens at Castle Gate.

The composition of the upper coal (No. 2 of the table) is almost identical with the Horse Canyon coal (No. 1). The analysis of the crushed product from all the Sunnyside mines shows a slightly higher percentage of ash and lower proportions of volatile matter and fixed carbon. The ratios between the volatile matter and fixed carbon, however, as indicated in the two analyses, are essentially the same.

*Bear Canyon.*—A traverse of the Book Cliffs scarp across T. 14 S., R. 13 E., which has not been subdivided into sections, locates the coal prospects of Bear Canyon in the N.  $\frac{1}{2}$  Sec. 10. Two prospect pits have been dug in the east fork of the canyon, on the coal at the base of the series. The bed has been partially burned near the outcrop and only 4 $\frac{1}{2}$  feet of coal is exposed in the excavation.

*Rock Canyon.*—A coal bed 5 feet 10 inches thick is exposed by prospect in the SE.  $\frac{1}{4}$  NE.  $\frac{1}{4}$  Sec. 32, T. 13 S., R. 13 E. This coal is near the same horizon as the Sunnyside coal, being probably below the lower bed at that place.

*Pace Canyon.*—Prospecting has been done in the NW.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  Sec. 30, T. 13 S., R. 13 E., where the coal has been burned near the surface. A tunnel has been driven 50 feet on the burned bed, reaching the edge of the fresh coal. Five feet of fresh coal is exposed in another prospect, where the upper part was concealed. These coals are in the lower part of the coal-bearing series.

*Dugout Canyon.*—The lowest coal bed in this series has been mined by tunnel in the SE.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  Sec. 23, T. 13 S., R. 12 E. The bed is 9 feet 6 inches thick and contains a thin bony seam 18 inches below the top. The coal is otherwise massive and clean. Analysis No. 4 above shows the coal to be the equal of any other that has been tested in the Book Cliffs field. Its content of ash, including the bony parting, is the lowest. About 100 feet higher in the section is a second bed showing 5 feet of coal in a shallow prospect. The exposure is at the forks of the canyon near the center of the NW.  $\frac{1}{4}$  Sec. 23. This coal is apparently of good grade, except a thin parting near the top. A third double bed containing four feet of coal occurs 200 feet above the first, in a shallow prospect in the north side of the canyon. The parting of shale is 2 feet. One bench of what appears to be the same coal is exposed in the SE.  $\frac{1}{4}$  Sec. 23, also in the SW.  $\frac{1}{4}$  Sec. 15. The showing is 2 to  $2\frac{1}{2}$  feet thick.

*Spring Canyon.*—A bed of coal 5 feet 4 inches thick has been opened in the NE.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  Sec. 21, T. 13 S., R. 12 E. There is a thin parting in the coal 4 inches below the top. Otherwise the coal is massive. This bed is in the lower part of the coal-bearing series and is believed to be 50 feet above the horizon of the lowest seam.

*Soldier Canyon.*—Coal has been mined for local use and prospected in a number of places in the central part of the coal series, in the NE.  $\frac{1}{4}$  Sec. 18, T. 13 S., R. 12 E. The coal worked is 2 feet 7 inches thick. A lower coal is exposed in the base of the gulch tributary to Soldier Canyon in the NE.  $\frac{1}{4}$  Sec. 13, T. 13 S., R. 11 E. This natural exposure shows  $4\frac{1}{2}$  feet of coal, but both the upper and lower parts are concealed.

*Coal Canyon.*—Six beds of coal are exposed in Coal Canyon in the E.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  Sec. 10, T. 13 S., R. 11 E. Four of these, aggregating 22 feet, are thick enough to work. Three occur in natural exposures and two have been mined. The coal in the lower mine is 8 feet 6 inches thick and its quality is indicated by analysis No. 5 of the table above. It occurs between massive beds of sandstone, each 40 to 45 feet thick. The coal in the other mine, 155 feet



higher in the section, is 5 feet thick and its quality is shown by analysis No. 6. There is an intermediate bed, 5 feet 4 inches thick, but it contains a thin parting of bony coal. The lowest bed, 3 feet thick, is 200 feet below the lower mine.

*Deadman Canyon.*—A coal bed 6 feet 10 inches thick has been prospected in the SE.  $\frac{1}{4}$  SW.  $\frac{1}{4}$  Sec. 7. T. 13 S., R. 11 E. It is estimated to be the same as the lowest bed mined in Coal Canyon. A parting of shale occurs 16 inches below the top. Otherwise the coal appears to be equal to the corresponding bed mined in Coal Canyon.

*Cordingly Canyon.*—A coal bed 4 feet 3 inches thick has been opened in the east fork of Cordingly Canyon, in the NW.  $\frac{1}{4}$  Sec. 14, T. 13 S., R. 10 E. The coal has a shale roof and a massive sandstone floor. It has a bright luster and is clean, but fractures easily, and a considerable quantity of slack is produced in mining. This coal is apparently at the base of the coal-bearing series. A coal bed 14 feet thick occurs 125 feet higher in the section, between a massive sandstone 60 feet thick below and another sandstone 6 to 8 feet thick above. A thin and variable parting of gnarly, sandy shale occurs 4 feet below the top of the coal. The coal is massive and lustrous, but breaks readily into blocks in mining, in a similar manner to the lower bed. A short tunnel or drift has been run on this coal in the SE.  $\frac{1}{4}$  SW.  $\frac{1}{4}$  Sec. 11.

*Ballinger Mine.*—The basal coal of the series is mined in the west fork of Cordingly Canyon, in the SE.  $\frac{1}{4}$  SW.  $\frac{1}{4}$  Sec. 10, T. 13 S., R. 10 E. The coal is 20 feet thick, massive, and comparatively hard. It mines for the most part in large irregular blocks. Sandstone occurs in contact both above and below. This coal is mined and transported by wagon for domestic use in the town of Price. Large rooms are excavated and wagons are driven into the face of the working to be loaded.

*Wade Prospects.*—Three coal beds are exposed in the prospects of Wade and Lawley, in the SW.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  Sec. 16, T. 13 S., R. 10 E. These coals occur in the lower 160 feet of the coal-bearing series. The lowest coal is the same as that in the Ballinger mine. It is 20 feet thick and massive. It rests directly on a solid

sandstone and has a shaly sandstone roof. The second coal, 40 to 50 feet above, is similar in structure and appearance to the first. It is 8 feet 6 inches thick and lies in contact with the sandstone above and below. Of the third coal only the lower 15 feet are exposed. The excavation has not penetrated the weathered coal in the upper part, where the top of the bed is concealed. A thin shaly parting occurs  $2\frac{1}{2}$  feet above the base of this coal. The lower coal in this section is exposed in three openings in the west fork of Bull Canyon, near the south side of Sec. 9, T. 13 S., R. 10 E.

*Panther Canyon.*—Two prospects have been driven on the coal at the base of the series in the NW.  $\frac{1}{4}$  NW.  $\frac{1}{4}$  Sec. 8, T. 13 S., R. 10 E. The coal has been burned near the surface in this vicinity and the shallow excavations revealed only a part of the coal.

*Castle Gate Mine.*—One of the coals near the base of the coal-bearing series is mined at Castle Gate. The coal is worked in a series of slopes driven on the rise of the bed toward the south. At the entrance to the tenth rise in the northern part of the mined area the coal is a little more than 4 feet thick. At the face of the coal in the first rise in the southwestern part of the mine the thickness is 6 feet, while in the southeastern part it is 10 feet. At intermediate points it varies between these extremes. The coal is usually massive and clean. The floor is a solid sandstone and lies in low rolls or undulations, being so uneven that mining machines cannot be successfully used. The roof is usually sandstone. The shales occur locally at the contact of the coal. The quality of the Castle Gate coal is shown by analyses Nos. 7 and 8 of the table (p. 294). The mine has been driven through the ridge in places to a fringe of burned coal. The width of the burned area varies and the high temperature of the rock in places where the boundary is approached indicates that spontaneous combustion of the coal probably has not entirely ceased.

*Spring Canyon.*—The lowest workable coal in the series is opened in two small mines in sec. 9, T. 13 S., R. 9 E. The first, known locally as the Rhodes mine, is near the center of the section in the gulch leading into spring canyon. The coal is in three parts and the section is as follows:

## SECTION AT RHODES MINE.

	FT.	IN.
1. Sandstone partially exposed		
2. Shale .....	4	
3. Coal, upper bench.....	1	
4. Shale .....	1	4
5. Coal, middle bench.....	1	
6. Shale .....	3	
7. Basal bench of massive coal, underlain by solid white sandstone....	5	

The second exposure in the NW.  $\frac{1}{4}$ , sec. 9, is known as the Platt mine, and the seam worked at this place probably corresponds to the upper bench of the bed showing in the Rhodes mine, as indicated by the following section:

## SECTION AT PRATT MINE.

	FT.	IN.
1. Sandstone partially exposed		
2. Shale ... ..	2	6
3. Massive coal.....	5	
4. Slope, talus covered, probably shale and Lower coal of Rhodes mine.....	9	
5. Massive white sandstone.		

*Pleasant Valley.*—Several coal beds have been prospected in T. 12 S., R. 7 E., and some mining is being done for local consumption in secs. 30 and 31. The mine in the NW.  $\frac{1}{4}$  SE.  $\frac{1}{4}$  sec. 30, shows a coal bed 5 feet 10 inches thick that is clear of shaly impurities and of fair quality. The coal is believed to be the same as the coal once mined in the NW.  $\frac{1}{4}$  sec. 31, where a tunnel has been driven through the hill from the Winterquarters mine. On the north side of the canyon in sec. 31, a prospect shows 4 feet, nine inches of clean coal. A coal bed lower in the rocks and 6 to 7 feet thick is mined near the bottom of the canyon, east of the center of sec. 31. The coal from this mine is used for local consumption in the town of Scofield. A coal bed has been prospected very near the west

side of SW.  $\frac{1}{4}$  sec. 11, and both prospected and mined in the NW.  $\frac{1}{4}$  sec. 13 T. 12 S., R. 7 E. At the first locality the coal is  $3\frac{1}{2}$  feet thick, while at the second  $3\frac{1}{2}$  to 4 feet of coal is exposed, the base being concealed. In each instance the coal rests on thick white sandstone. The coal is near the top of the coal bearing series. A coal is mined for local use near the center of sec. 2, T. 12 S., R. 6 E. The bed is 4 feet thick and the coal seems to be of good quality. It is apparently stratigraphically above the formation recognized as coal bearing in the Book Cliffs field. Prospectors who have worked at Winterquarters and Clear Creek are of the opinion that extensive north-south faults occur on the west side of Pleasant Valley, and that these faults explain the occurrence of coal in the high country in that vicinity. The smooth surface of the country makes it exceedingly difficult to demonstrate the existence of such faults, and without the evidence of such stratigraphic correlation it cannot be asserted that these high coals are to be classed with those occurring near the base of the valley at Scofield, Winterquarters or Clear Creek.

*Scofield.*—Mines once operated by the Union Pacific Railroad Company are located one-half mile southeast of Scofield. It is reported on reputable authority that the coal is 25 to 30 feet thick. Only the middle portion of the bed was worked, it is explained, because the coal formed a better roof than the overlying shales. A cave-in has occurred toward the south end of the coal workings, exposing about 30 feet of strata above the coal in the mine, including three beds of coal. The lowest of these beds is 14 inches thick, the middle 5 feet, 3 inches and the uppermost 9 feet. The coal of the two thicker beds appears to be of fair quality.

*Winterquarters Mines.*—Coal is being mined on a large scale in the south side of the canyon at Winterquarters, which is located in the E.  $\frac{1}{4}$  sec. T. 13 S., R. 6 E., and the W.  $\frac{1}{4}$  sec. 6, the entrance, near the center of the east side of sec. 1, T. 13 S., R. 6 E. to 16 feet at the face of the coal in the southeastern part of the working, near the center of sec. 7, T. 13 S., R. 7 E. The coal is massive and generally clear of shaly impurities. Analysis No. 9 (see table above, p. 294),

made from samples selected at the face of the working in the southeastern part of the mine is almost identical with that of the Castlegate coal. The same bed has been worked quite extensively from openings in the north side of the canyon at Winterquarters; also in the south side east of the town and near the center of the W.  $\frac{1}{4}$  sec. 6 T. 13 S., R. 7 E.

Two distinct east-west faults were encountered in mine No. 1. Along the one on the north the downthrow is 40 feet, on the south and along the other the down throw is 90 ft. on the north. The result is an east-west dropped block a few hundred feet in width. The coal rises toward the south at an angle of about  $3^{\circ}$  and the downthrown block is overcome in mining by increase in the grade of the slope.

The coal and associated strata in mine No. 1 and in the mine opposite on the north side of the canyon are cut by a number of dikes of basic igneous rocks bearing east and west. The dike in the south mine, nearly 150 feet from the entrance, is approximately vertical 5 feet in width at the floor and 1 foot at the roof. It swells to a width of 10 feet in the coal bed, which is here 9 feet thick and has metamorphosed the coal, producing a coke-like substance to a distance of 2 to 3 feet on each side. The dike in the northern mine occurs about 300 feet from the mouth of the slope. It is approximately 10 feet thick and has coked the coal in a similar manner as in mine No. 1. Thin dikes of igneous rock 1 foot and less in thickness are reported by Superintendent Thomas J. Parmley to occur at other places in these mines. Such thin dikes, it is stated, do not metamorphose the coal appreciably.

*Crandall Canyon.*—A coal bed is mined for local consumption in the SE.  $\frac{1}{4}$  SW.  $\frac{1}{4}$  sec. 13, T. 13 S., R. 6 E., near the head of Crandall Canyon. This canyon leads into Pleasant Valley midway between Scofield and Clear Creek. The coal is approximately 12 feet thick and is massive and clean. It is mined on the rise toward the south.

*Clear Creek.*—This mine is in the town of Clear Creek, near the head of Pleasant Valley. The Clear Creek coal varies in thickness in a north-south direction through the mine working, a length of nearly 7,000 feet. In the southern part the coal is massive

and is 13 feet, 5 inches thick. No shaly or other impurities were noted. Near the center of the workings a thin shale parting enters the coal. Toward the north and within a distance of 2,000 feet the shale swells to a thickness of sixteen feet, dividing the coal into two benches. In the northern part of the mine, where the shaly parting is thick, only the upper bench 4 to 6 feet thick, is worked.

Several small north-south faults occur near the outcrop, displacing the coal vertically from 5 to 40 feet. Nearly 2,200 feet east of the entrance to the mine a large fault occurs, bearing a few degrees east of north, by which the coal is displaced out of sight. The amount of throw was not determined.

Coal was being prospected in rocks apparently above the coal bearing series hitherto recognized in the SW.  $\frac{1}{4}$  sec 31, T. 13 S., R. 7 E., near the head of the gulch bearing west from Clear Creek. The coal bed is about 10 feet thick and it is regarded by the prospectors as being the same as one of the workable beds found in Pleasant Valley, 1,000 to 1,100 feet lower in the section. The rocks in this region, as elsewhere in the Book Cliffs field, are almost horizontal, and the coal in Huntington Canyon, 2 miles southwest of the prospect is near the same stratigraphic position and about the same elevation above sea level as the Clear Creek coal. If the position of the coal near the head of the gulch west of Clear Creek is explained by faulting, as claimed by prospectors, two faults instead of one are required, and it will be necessary to show that a part of the high country between Huntington Canyon and Pleasant Valley is faulted upward a thousand feet or more. Certain thick and distinct sandstone beds, always associated with the lower coals, were noted in the vicinity of the prospects west of Clear Creek. Rock exposures are less frequent, however, toward the mountain tops than in the lower parts of the canyons.

*Miller Canyon.*—Two coal beds have been exposed by prospect near the center of the N.  $\frac{1}{4}$  sec. 32, T. 15 S., R. 8 E. The lower bed ten feet thick, is apparently 25 feet above the horizon of the lowest coal in the Book Cliffs section. The second bed is 4 feet thick, and is separated from the first by five to six feet of shale. The upper coal is overlain by massive sand-

stone. Near the center of the west side of sec. 20 several beds of coal occur near the base of the coal-bearing rocks in natural exposures. Some of these give evidence of workable thickness, though the coal is disintegrated at the surface.

*Cedar Canyon.*—The basal coal in the Book Cliffs section has been worked occasionally for a number of years in the north side of Cedar Canyon, in the SW.  $\frac{1}{4}$  sec. 9, T. 16 S., R. 8 E. The coal is 20 feet thick and is separated locally into three benches by variable, thin, bony, and shaly partings. The lower bench, 11 feet thick, is massive and clean. The middle bench is 5 feet thick and the upper bench 4 feet. The coal lies on massive sandstone and is succeeded by beds of thin and shaly sandstone. A tunnel 300 to 400 feet long has been driven toward the north on the lower coal, a short distance west of the present working, in the SE.  $\frac{1}{4}$  sec. 8. The coal in this mine varies in thickness from 16 to 20 feet, and it is reported by one of the operators that no shaly partings were found. The operations in Cedar Creek are conducted by Messrs. Howard & Sons of Huntington, and they are known as the Howard mine. A coal bed is partially exposed in the north side of the canyon 400 feet stratigraphically above the Howard mine. Several feet of disintegrated coal are shown, but the full thickness of the bed was not determined.

*Huntington Canyon.*—Systematic prospecting has been done in Huntington Canyon through Tps. 16 and 17 R. 7 E. The prospectors confined their attention to the coals in the lower part of the coal-bearing section, and it is reported by the State coal-mine inspector that more than 1,000 openings have been made on these beds.

Twelve or more prospects have been made exposing workable coal beds in Bear Gulch, in sec. 24 and 25, T. 16, S., R. 7 E. Two of the lower coals are exposed on the west side of the gulch, in the northwest corner of section 25. The section of coals and associated rocks is as follows:

SECTION IN BEAR GULCH, NW.  $\frac{1}{4}$  SEC. 25 T. 16 S., R 7 E.

	FEET.
1. Heavy sandstone	
2. Shale .....	1.5
3. Massive coal.....	10
4. Shale and sandstone alternating beds; the sandstone at the top makes the floor of the upper coal.....	40
5. Sandstone ...	17
6. Shaly roof. ....	1
7. Massive coal.....	12
8. Massive sandstone; base of lower coal.	

Five other beds of workable coals, aggregating a thickness of 48 feet, are reported independently by two reputable prospectors to have been opened at several places in 300 feet of strata on the east side of the gulch, in the S.  $\frac{1}{4}$  sec. 24. Several prospects have been made on some of these coals, also in the west half of the same section.

A massive coal bed, 13 feet, 4 inches thick, situated near the base of the coal-bearing section, is mined for local use in Deer Gulch, in the NW.  $\frac{1}{4}$  sec. 11 T. 17 S., R. 7 E. A coal bed 3 feet thick has been prospected on the west side of the gulch, near the middle of the east side of sec. 10. This coal is about 175 feet above the coal in the mine.

A coal bed partially burned, exposed in Meeting House Gulch, in the NE.  $\frac{1}{4}$  SE.  $\frac{1}{4}$  sec. 34, T. 16 S., R. 7 E., shows 3 feet of coal. Two beds of coal are opened in three prospects near together in Ridley Gulch, near the northeast corner of sec. 28. The lower of these two beds, 12 feet thick, is at the base of the coal-bearing series, and rests on massive sandstone. The other bed, partially burned, occurs 25 feet higher in the section. Five feet of coal are exposed. A number of other prospects have been made on coal farther up the gulch in the same section.

A coal bed 9 feet thick, at the base of the coal-bearing series, has been prospected at the mouth of Trail Gulch, near the center of the NE.  $\frac{1}{4}$  sec. 22, T. 16 S., R. 7 E. It rests on massive white sandstone and is overlain by four feet of blue shale. On the east side





SECTION OF COAL AND ASSOCIATED ROCKS AT OTTERSON  
MINE.

	FT.	IN.
1. Coal crop, weathered.....		
2. Massive sandstone.. . . .	50	
3. Thin coal seam.....		
4. Shaly sandstone. . . . .	10	
5. Coal.....	1	
6. Shale.....	1	
7. Coal.....		8
8. Shale .. . . .	1	
9. Coal, upper bench. . . . .	5	10
10. Thin shale parting.....		
11. Massive coal, lower bench.....	6	
12. Bony coal.. . . .	1	
13. Sandstone .. . . .	3	
14. Sandy shale....	4	
15. Massive sandstone.....	60-80	

*Reed Mine.*—A coal bed near the same stratigraphic position as that worked at the Otterson mine has been opened for local use near the center of the south side of sec. 22, T. 17 S., R. 7 E. The coal is 7 feet, 6 inches thick and rests on massive white sandstone. The roof of the coal is a thin, bony shale that is overlain by 60 to 80 feet of sandstone. Both the Reed and the Otterson mines occur in the cliffs near the heads of gulches leading toward the south, and are approached by steep, graded wagon roads.

*Johnson Mine, Cottonwood Canyon.*—The Johnson mine is driven on a bed of coal 7 feet 10 inches thick, situated on the west side of cottonwood Canyon, in the SW.  $\frac{1}{4}$  NE.  $\frac{1}{4}$  sec. 25, T. 17 S., R. 6 E. The floor of the coal is a massive white sandstone. Shaly sandstone 3 feet thick forms the roof. A coal bed 5 feet thick is reported by Mr. Johnson, the operator of the mine, to occur above the shaly sandstone; also 50 feet higher in the section a bed 3 feet thick is said to have been found. A bed of shale and bony coal occurs 50 to 60 feet below that of the Johnson mine, but it has been proved to be of no value.

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domestic fuel and the town owns the land in which the most valuable mine is situated. A section of the strata including the coals is given above (p. 294), in the discussion of the sandstones in the Red Plateau. Two coal beds of workable thickness were noted. The lower coal is variable both in thickness and in respect to its included strata of bone and shale. A tunnel has been made on the lower bed near the center of sec 26, T. 22 S., R. 6 E. The coal occurs in two partings separated by 14 inches of shale. The lower workable bench consists of 6 feet of bony coal. The upper layer is 14 inches thick. Across the gulch in which the mine occurs the coal seems to thin out within a distance of one-fourth mile. A coal bed near the same position in the strata crops out in the cliffs on the west side of Muddy Creek Canyon, in the NE.  $\frac{1}{4}$  sec. 35 T. 22 S., R. 6 E. The coal is in three benches and is similar in quality to that at the mine. The lower and middle benches are each 2 feet thick, while the upper is 1 foot 9 inches. They are separated by bands of bony shale 4 to 6 inches thick.

*Emery Mine.*—An upper coal bed occurs 125 to 150 feet higher in the section and within 50 feet of the top of the sandstone series below the shale of Castle Valley. This coal is in a single massive bed 5 feet thick. It is encased in shale and adheres to the roof and floor so strongly that it is separated with difficulty in mining. The coal contains no shaly or bony partings and compares favorably in composition with coals of the Book Cliffs series, as shown by its analysis (see table, p. 294). The mine is situated in the NE.  $\frac{1}{4}$  SW.  $\frac{1}{4}$  sec. 2, T. 23 S., R. 6 E., on the highland west of Muddy Creek Canyon. A drift has been driven 50 feet on the coal and two rooms have been turned.

#### CONCLUSION.

With the possible exception of one or two coal beds occurring in the high land west of Pleasant Valley all the coals of value known at the present time in the Book Cliffs field are found in the lower part of the coal-bearing strata and near the base of the Laramie formation. At no locality investigated was it found that the entire coal-bearing section had been

thoroughly prospected. The beds in the lower part of the series are the more conveniently situated for exploitation and were found usually of ample thickness for profitable working. For these reasons the attention of the prospector and miner has been devoted to them. At every locality investigated for more than 100 miles in the Book Cliffs field, coals ranging from 3 to 20 feet in thickness were found where the lower part of the section of the coal-bearing series had been carefully prospected.

The coals in the different parts of the field are remarkably uniform in their physical characteristics. They are black, moderately hard, and usually massive. Occasionally shale partings occur in the bed, but one or the other, and sometimes both benches are sufficiently thick to be profitably mined.

The composition of the coals in various parts of the field and in several beds varies but little, in so far as proximate chemical analysis show. The fuel ratios in the 14 samples analyzed range between the extremes of 1.06 and 1.46. The content of sulphur is remarkably low and uniform. The coking property of the coals has been tested in but few localities, and of these only the coals mined at Sunnyside are known to be coked.





1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. The text outlines various methods for organizing and storing data, including digital databases and physical filing systems. It also mentions the need for regular audits and reviews to ensure the integrity of the information.

2. The second section focuses on the role of communication in achieving organizational goals. It highlights the importance of clear and concise communication channels, both internally and externally. The text suggests implementing regular meetings and reports to keep all stakeholders informed and aligned. It also discusses the benefits of open communication, such as improved collaboration and faster problem-solving.

3. The third part of the document addresses the challenges of managing a large and diverse team. It acknowledges that different team members may have varying skills, experiences, and backgrounds. The text provides strategies for fostering a cohesive team environment, such as providing training and development opportunities, encouraging cross-functional collaboration, and recognizing individual contributions. It also mentions the importance of setting clear expectations and roles for each team member.

4. The final section discusses the importance of innovation and continuous improvement. It encourages the organization to stay up-to-date with the latest trends and technologies in its field. The text suggests creating a culture of innovation where employees are encouraged to think creatively and propose new ideas. It also mentions the need for regular evaluation and feedback to identify areas for improvement and implement changes accordingly.



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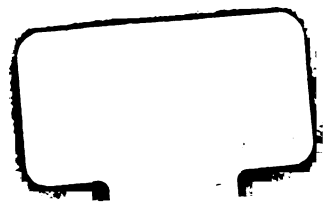


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